Pharmaceutical care case studies

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The curriculum can not be sold in any form!
For an effective and safe drug treatment it is essential that the patient is well informed about his/her medications and their use. Pharmacists have the responsibility to inform and counsel patients properly about their drug therapy. Counseling should be part of all patient-pharmacist interactions with a content and form depending on the particular problems (disease) and the individual patient. Pharmacist-patient counseling activity is a basic component of pharmaceutical care and of medication therapy management.

What does pharmaceutical care mean?

Based on the philosophy of patient-oriented clinical pharmacy pharmaceutical care was first defined by Hepler and Strand in their article published in 1990 as follows: “pharmaceutical care is the responsible provision of drug therapy for the purpose of achieving definite outcomes that improve a patient’s quality of life.”

The main elements of pharmaceutical care include the following activities:

- The pharmacist gives complex drug information to the physician to help making an optimal drug choice.
- At dispensing a product the pharmacist provides advice on the correct administration of the drug; explains when the drug’s action is to be observed, and gives information on the potential adverse effects.
- The pharmacist should improve the patient’s adherence.
- The pharmacist should participate in monitoring the therapeutic outcome.

The traditional Hungarian pharmacy practice included all the above mentioned elements of patient-oriented service. However, in the last decade of the 20th century this good practice activity declined, but novel regulations are now in form to help to reinforce it (56/2009. (XII. 30.) Act of the Ministry of Health).

According to this regulation pharmaceutical care activities include the following:

- counseling upon refilling prescription only medications (POMs) and upon dispensing over-the-counter drugs (OTCs) and medicinal devices (basic level),
- therapy management of patients with chronic diseases (advanced level).

This regulation fulfils the philosophy of the Association of the European Self-Medication Industry (AESGP), according to which pharmaceutical care covers all of the different services provided by the pharmacist for the patient either when he/she comes to the pharmacy with a prescription, or when he/she seeks help for minor health problems.

Basic elements of communication / counseling upon dispensing prescription only medications include the following:
First of all the pharmacist should verify who the patient is, ie. whether the real drug user or a caregiver is facing him/her in the pharmacy.

In case of the **initiation of a therapy** the following information should be given:

- the appropriate trade name of the medication and the purpose of administration,
- route, dosage form, dosage and schedule of administration,
- expected time for the onset of action,
- expected duration of the treatment,
- precaution to potential drug–drug and drug–food interactions,
- common adverse effects that may occur, referring to the possible or required actions to be taken once they occur,
- actions to be taken in case of missed or double dosing,
- any other information in connection to the specific patient or drug.

From a patient who **returns for a repeat prescription**, the following questions should be asked:

- Have you used your medicine as prescribed?
- Have you had any problem with following the directions for administration?
- Have you missed any doses?
- Have you experienced any adverse or unexpected effects?

Counseling aspects of dispensing OTC medications belong to the concept of “directing self-medication” which is a particularly important responsibility of the pharmacist because in these cases the diagnosis is not made by a physician. Concerning this issue, Linda Strand holds the following opinion: “Coming to a decision on the patient’s health problem is not a basic task of pharmacists, but it is a privilege and an opportunity to undertake this responsibility!”

When a patient comes into the pharmacy asking for a particular product suggested by an advertisement or a non-healthcare professional, and on the other hand he/she complains of symptoms he/she experiences and asks for a drug to eliminate the uncomfortable condition, it is the pharmacist’s responsibility to make a decision on the appropriate OTC medication or to refer the patient to a doctor.

To find out about the patients’ problem the next questions are to be asked before making a careful decision:

- Who is ill (child, an old person, a pregnant woman, etc.)?
- What is the complaint?
- How serious are the complaints, and how long have the symptoms existed?
- Has the patient/caregiver attempted to alleviate the symptoms? How?
- Does the patient have any known allergies (to drugs, environmental materials, foods, etc.)?
Evaluation of the patient’s answer on the allergy issue is difficult, because many patients believe that any kind of an intolerance event is equal with hypersensitivity.

Regarding professional ethical considerations maintaining the privacy of consultation is a particularly important issue: the discussion between the patient and pharmacist should not be overheard! The outcome of a pharmacist-patient communication is highly recommended to be documented for a possible continuation of care.

The therapy management activity of the pharmacist – that is the advanced level of pharmaceutical care – is supported by evidence based therapeutic guidelines. The medical treatment or practice guidelines are based on the best available scientific literature and outcome data. The content of these disease specific pharmaceutical care guidelines are complex and include prevention and screening, adequate and safe use of medicine (POM or OTC), improving the adherence of patients, and need for referral to medical professionals.

Summing up it seems to be extremely useful to follow the EDQM (European Directorate for Quality of Medicine & Heath Care) concept of pharmaceutical care:

“Pharmaceutical care is a continuous process of adding the quality of care principles to an individual pharmaceutical service (eg. medicine dispensing, blood pressure measurement). These principles include: patient counseling and education, documentation of interaction (medication decision), follow-up of medication decisions (to stop, to go on or to modify medication), interprofessional collaboration and patient involvement”.

Never forget: educate before you medicate!

Case studies of this book demonstrate typical problems occurring in the community pharmacy practice.

Gyöngyvér Soós

**SOURCES**

- Guidelines on counseling New Brunswick Pharmaceutical Society 2005. (Canada)
• Pharmaceutical Care: Policies and Practices for a Safer more Responsible and Cost – effective Health System EDQM 2012 (www.edqm.eu)
TOPIC: PATIENT WITH TREATED HYPERTENSION

MEDICAL HISTORY

Patient
60-year-old woman, moderately overweight (BMI=26). Treated for hypertension for 15 years. 
(BMI=Body Mass Index; kg/m²)

Current complaints
Currently she has had several blood pressure elevations despite adhering to prescribed antihypertensive treatment. During these hypertensive urgency situations she has had moderate, dull headache and felt tension. Due to family problems her life was stressful in the previous months.

She claims her regular antihypertensive medications (see below). She mentions that she has been prescribed a new medicine that should be taken only in case of blood pressure elevations above 170 mmHg. She asks the pharmacist whether she could continue taking Valeriana Relax capsules.

Abrupt blood pressure elevation:

In patients diagnosed with hypertension (treated or untreated) abrupt blood pressure elevations detected during average blood pressure readings might result from distress, panic, pain, skipping drug doses, changes in drug administration/use or extrinsic factors.

1. Blood pressure elevation: between 180/110 and 220/140 mmHg:
   a) Symptoms: headache, anxiety; often asymptomatic
      Treatment plan: can be managed in ambulatory care
   b) Symptoms: severe headache, dyspnoe
      Treatment plan: inpatient care, short-term (72 hours) observation

2. Blood pressure elevation: above 220/140 mmHg
   Symptoms: dyspnoe, chest pain, nocturia, altered mental status, weakness
   Treatment plan: inpatient care, admission to intensive care unit

(Hungarian Hypertension Society: Treatment guideline of hypertension in adults and children, 2009., chapter 8.10, pp 137–138)

Other diseases
Vertigo

Medications, natural products, dietary/herbal supplements taken

- Regularly:
  Meramyl HCT 5/25 tablet (ramipril and hydrochlorothiazide; for one year); one tablet/day (morning)
  Cardilopin 5 mg tablet (amlodipin; for one year); one tablet/day (evening)
  Betaserc 8 mg tablet (betahistine, for ten years) 2×2 tablets daily (morning and evening).
  Frontin 0.25 mg tablet (alprazolam, newly prescribed medicine); one tablet in the evening.
Tensiomin 12.5 mg tablet (captopril, newly prescribed medicine) half a tablet when necessary.

- Occasionally:
  Valeriana Relax capsule (Humulus, Passiflora, Valeriana, for approx. 2-3 months) 1 capsule in the evening.
- What has been done to relieve the complaints? Valeriana Relax capsule was started a few months ago, no improvement was perceived.

Lifestyle, profession
Non-smoker patient, works in an office. She drinks some alcohol occasionally. She does physical activity regularly, (walking or cycling for one hour, 3 or 4 times a week). She prefers low-fat foods and often eats fish (at least once a week). She pays special attention to follow a variable diet rich in vegetables using a cookbook she received last year, designed specially for cardiovascular patients. Thanks to her diet and the regular physical activity she gradually lost 5 kgs during the past year.

Allergies
No known allergies

Other relevant information
The patient has an automatic upper arm electronic/digital sphygmomanometer which she uses regularly. She records readings in a diary. She used to smoke (4-5 cigarettes daily), but quit smoking a year ago. She regularly drinks a light milkcoffee in the morning.

PHARMACIST’S INTERVENTION

Decision on dispensing medication
In the present case the prescription only medicines were dispensed without any other OTC medicines.

Reasons/background
There was no contraindication to dispense medication.

Details of dispensed medication (based on SmPC)

**VALERIANA RELAX® capsules (Humulus, Passiflora, Valeriana)**
It is not advisable to use this dietary supplement concomitantly with alprazolam because of the following reasons:
Hopefully the new alprazolam medicine will resolve sleeping difficulties caused by stress. According to interaction databases (Lexi-Interact™) dietary supplements containing valerian and passionflower may increase the sedative effects of alprazolam. In the present case (low dose alprazolam therapy) this would be an undesirable effect. According to patient’s opinion the regular use of Valeriana capsule has had no effect.
MERAMYL HCT® 5 mg/25 mg tablets (ramipril 5mg and hydrochlorothiazide 25mg)

- **Dosing regimen:** one tablet in the morning.
- **Method of administration:** The daily dose should be taken orally either before or after meal (meal does not affect bioavailability). The tablet should not be crashed or chewed.
- **Onset of action:** not relevant. The patient started to use this medication long ago.
- **Duration of therapy:** continuous, long-term
- **Possible side effects:**
  - Common: headache, weakness/fatigue, dizziness, dry cough, bronchitis.
  - Unknown frequency: angioedema, hypersensitivity
- **Contraindications:** no contraindications are relevant for the current patient.
  - Hypersensitivity to ramipril, other ACE-inhibitors, thiazides or other sulphonamide derivatives, or to any of the excipients.
  - History of angioedema (hereditary, idiopathic or angioedema in connection with previous ACE inhibitor or angiotensin II receptor antagonist treatment)
  - Pregnancy, lactation
  - Severely impaired renal function (creatinine clearance <30 ml/min/1.73 m² body surface area) or anuria.
  - Severe hepatic dysfunction and/or cholestasis, hepatic encephalopathy
- **Interaction with other medicinal products and other forms of interaction:** no interactions are relevant for the current patient.
  - Generally:
    - Concomitant use of potassium sparing diuretics, tacrolimus or ciclosporin increases the risk of hyperkalaemia. Monitoring potassium level is needed.
    - Non-steroidal anti-inflammatory drugs (NSAIDs) including acetylsalicylic acid: Chronic administration of NSAIDs may reduce the antihypertensive effect of an ACE inhibitor. NSAIDs and ACE inhibitors may exert an additive effect on the increase in serum potassium levels and may result in a deterioration of renal function. These effects are usually reversible.
    - Oral anticoagulants: the anticoagulant effect may be decreased by hydrochlorothiazide
- **Special warnings and precautions for use:** contains 129 mg lactose per tablet
- **Special precautions for storage, disposal and other handling:** Do not store above 25 °C

CARDILOPIN® 5 mg tablets (amlodipine 5 mg)

- **Dosing regimen:** one tablet in the evening
- **Method of administration:** The daily dose should be taken orally either before, during or after meal (meal does not affect bioavailability). Take it with one glass (approx. 2 dl) of liquid (e.g. water).
- **Onset of action:** not relevant. The patient started to use this medication long ago.
- **Duration of therapy:** continuous, long-term
• Possible side effects:
  o Common: somnolence, dizziness, headache (especially at the beginning of
treatment), palpitations, flushing, abdominal pain, nausea, ankle swelling
• Contraindications: no contraindications are relevant for the current patient.
  Generally: hypersensitivity to dihydropyridine derivatives, amlodipine or any of
the excipients, severe hypotension, obstruction of the outflow-tract of the left
ventricle (e.g. high grade aortic stenosis), haemodynamically unstable heart failure
after acute myocardial infarction (during the first 28 days), shock (including
cardiogenic shock)
• Interaction with other medicinal products and other forms of interaction: no
interactions are relevant for the current patient.
  Generally:
  o Concomitant use of amlodipine with strong or moderate CYP3A4 inhibitors
(protease inhibitors; azole antifungals; macrolides like erythromycin or
clarithromycin; verapamil or diltiazem; grapefruit) may result in significant
increase in amlodipine exposure. The clinical presentation of these
pharmacokinetic (PK) variations may be more pronounced in the elderly, thus
clinical monitoring and dose adjustment may be required.
  o CYP3A4-inductors: The concomitant use of CYP3A4 inducers (e.g., rifampicin,
hypericum perforatum) may give a lower plasma concentration of amlodipine.
More frequent blood pressure measurements and clinical monitoring are
required.
• Special precautions for storage, disposal and other handling: do not store above 25 °C.

**BETASERC® 8 mg tablets (betahistine 8 mg)**
• Dosing regimen: one tablet twice daily
• Method of administration: The tablet should be taken orally either before, during or
after meal
• Onset of action: not relevant. The patient started to use this medication long ago.
• Duration of therapy: continuous, long-term
• Possible side effects:
  o common: nausea, dyspepsia, headache
• Contraindications: no contraindications are relevant for the current patient
  Generally:
  o Phaeochromocytoma
  o Hypersensitivity to the active agent or any of the excipients
• Interaction with other medicinal products and other forms of interaction: no
interactions are relevant for the current patient.
  Generally:
  o Betahistine is a histamine analogue, thus concurrent administration of H1
  antagonists may cause a mutual attenuation of the effects of the active agents.
  (Lexi-Interact™ C category)
  o Betahistine may decrease the effect of beta 2 agonists (Lexi-Interact™ C category)
Concomitant use of MAO inhibitors may increase serum betahistine concentrations (Lexi-Interact™ C category)

- Special warnings and precautions for use: none
- Special precautions for storage, disposal and other handling: This medicinal product does not require any special storage conditions.

**FRONTIN® 0.25mg tablets (alprazolam 0.25 mg)**

- Dosing regimen: 1 tablet in the evening (regularly)
- Method of administration: The daily dose should be taken orally with a glass of water
- Duration of therapy: Based on the anticipated effect it will be determined after 1 month of treatment.
- Possible side effects:
  - very common: depression, sedation, somnolence, ataxia, memory impairment, dysarthria, dizziness, headache
  - common: decreased appetite, confusional state, disorientation, libido changes, anxiety, insomnia, nervousness, blurred vision,
- Contraindications: no contraindications are relevant for the current patient.
  
  Generally:
  - Alprazolam is contraindicated in patients with known hypersensitivity to benzodiazepines, alprazolam, or to any of the excipients
  - myasthenia gravis
  - severe respiratory insufficiency, sleep apnoea syndrome
  - severe hepatic insufficiency.
- Interaction with other medicinal products and other forms of interaction: no interactions are relevant for the current patient.
  
  Generally:
  - CYP3A4-inhibitors: may increase the concentration of alprazolam and enhance its pharmacological effect; CYP3A4-inductors: may enhance the metabolism of alprazolam and reduce its activity
- Special warnings and precautions for use:
  - Some loss of efficacy to the hypnotic effects of benzodiazepines may develop after repeated use for a few weeks (tolerance).
  - Benzodiazepines may induce anterograde amnesia. The condition most often occurs several hours after ingesting the product. To reduce the risk patients should ensure that they will be able to have an uninterrupted sleep of 7-8 hours.
  - Alcohol consumption is contraindicated during alprazolam treatment.
  - Sedation, amnesia, impaired concentration and impaired muscle function may adversely affect the ability to drive or use machines. If insufficient sleep occurs, the likelihood of impaired alertness may be increased. Caution is needed, especially in the first weeks of treatment.
  - Contains 96 mg lactose per tablet
- Special precautions for storage, disposal and other handling: Do not store above 30 °C.
TENSIOMIN® 12.5 mg (captopril 12.5 mg)

• Dosing regimen: if necessary, maximum 12.5 mg/day (half a tablet, twice daily). If systolic reading exceeds 170 mmHg half a tablet should be taken (6.25 mg captopril), and blood pressure measurement should be repeated within half an hour. Once the systolic reading has decreased to 150–160 mmHg or below dose should not be repeated. If systolic blood pressure is still high (above 150-160 mmHg) or symptoms are still present another half tablet can be taken. If symptoms are still present after the second dose, call a doctor immediately. Record readings and time of captopril use in the diary.

• Method of administration: The tablet should be taken orally either before, during or after meal.

• Onset of action: approx. 15-25 minutes

• Duration of therapy: occasional use

• Possible side effects:
  o Common: headache, orthostatic hypotension, dry cough (reversible with therapy discontinuation)

• Contraindications: no contraindications are relevant for the current patient.
  Generally:
  o Hypersensitivity to captopril, other ACE-inhibitors, or to any of the excipients.
  o History of idiopathic angioedema
  o Pregnancy

• Interaction with other medicinal products and other forms of interaction: no interactions are relevant for the current patient.
  Generally:
  o Concomitant use of potassium sparing diuretics, tacrolimus or ciclosporin increases the risk of hyperkalaemia. Monitoring potassium level is needed.
  o Non-steroidal anti-inflammatory drugs (NSAIIDs) including acetylsalicylic acid: chronic administration of NSAIIDs may reduce the antihypertensive effect of an ACE inhibitor. NSAIIDs and ACE inhibitors may exert an additive effect on the increase in serum potassium and may result in a deterioration of renal function. These effects are usually reversible.

• Special warnings and precautions for use:
  o contains 26.25 mg lactose per tablet

• Special precautions for storage, disposal and other handling: do not store above 25°C.
NON-PHARMACOLOGICAL ADVICE

Blood pressure measurement:
Electronic/digital sphygmomanometers should be validated each year. Comparison of the blood pressure readings measured by an electronic/digital appliance and a sphygmomanometer used in a pharmacy/doctor’s office is also advisable. Steps of an appropriate blood pressure measurement was taught to the patient before, and she is aware of it.

Lifestyle:
Non-pharmacological therapy of hypertension (e.g. diet, reduced salt intake, body weight reduction, etc.) was discussed with the patient before.

MONITORING

Regular blood pressure measurements with precise date/time recordings in a diary is recommended. Abrupt elevations and response to treatment should be also recorded.

SEEKING MEDICAL ADVICE

• In case of frequent hypertensive emergencies supervision of antihypertensive therapy is needed.
• Call a doctor if systolic blood pressure is still high or symptoms are still present after taking the maximum dose of captopril or if an abrupt blood pressure elevation recurs within 24 hours.
• In case of experiencing a strong headache, chest pain or dyspnoe during abrupt blood pressure elevation, call emergency.
• Consult your doctor if you experience any remarkable side effects after starting the newly prescribed medications.

SOURCES

• The European Society of Hypertension (ESH) and of the European Society of Cardiology (ESC): 2013 ESH/ESC Guidelines for the management of arterial hypertension. Journal of Hypertension July 2013
• Magyar Hypertonia Társaság irányelve: A hypertoniabetegség felnőttkori és gyermekkori kezelésének szakmai és szervezeti irányelvei 2009. [Hungarian Hypertension Society: Treatment guideline for hypertension in adults and children, 2009]
• Barna, István: Mit okozhat a magas vérnyomás? [What are the consequences of hypertension?] SpringMed Budapest 2007
• National Institute of Pharmacy and Nutrition; Drug Database; Summary of Product Characteristics of MERAMYL HCT 5 mg/25 mg tablets; URL: http://www.ogyei.gov.hu/gyogyszeradatbazis/ [Accessed: May 2015.]
• National Institute of Pharmacy and Nutrition; Drug Database; Summary of Product Characteristics of Cardiloipin 5mg tablets; URL: http://www.ogyei.gov.hu/gyogyszeradatbazis/ [Accessed: May 2015.]


• National Institute of Pharmacy and Nutrition; Drug Database; Summary of Product Characteristics of Frontin 0.25mg tablets; URL: http://www.ogyei.gov.hu/gyogyszeradatbazis/ accessed: May, 2015.

TOPIC: HYPERTENSION

MEDICAL HISTORY

Patient
40-year-old male patient, overweight (BMI=29).

Current complaints
The patient has no complaints. The occupational physician measured elevated blood pressure (167/113 mmHg). Measurement has been repeated on three different occasions, and hypertension was diagnosed. He claims his first antihypertensive medication.

Other diseases
No other known diseases.

Medications, natural products, dietary/herbal supplements taken
- Regularly:
  - Nebilet 5 mg tablet (nebivolol, new medicine): one tablet in the morning
- Occasionally:
  - Hova tablet (5.5 mg dried humulus extraction, 200.2 mg dried valeriana extraction, for one year) for sleeping problems, approx. 1-2 times weekly
  - Rennie chewable tablet (680 mg Calcium-carbonate, 80 mg basic magnesium-carbonate, for half a year), approx. 1-2 times weekly.

Lifestyle, profession
Works at an international firm in a leading position and he is often stressed. He smokes (10-15 cigarettes/day). He does not follow a special diet. He likes spicy foods. He regularly drinks beer while watching TV (1-2 liters daily).

Allergies
No known allergies

Other relevant information
He lives on his own. He used to do sport (e.g. running), now he has been is too busy for it lately. His father died in at the age of 55 due to acute myocardial infarction.

PHARMACIST’S INTERVENTION

Decision on dispensing medication
In the present case the prescription only medicine was dispensed without any other OTC medicines.

Reason/background:
There was no contraindication to dispense medication.
Details of dispensed medication (based on SmPC)

NEBILET® 5 mg tablets (nebivolol 5 mg)

- Dosing regimen: 1 tablet in the morning
- Method of administration: The daily dose should be taken orally either before, or during meal (meal does not affect bioavailability).
- Onset of action: antihypertensive effect develops after 1-2 weeks (sometimes after 4 weeks).
- Duration of therapy: continuous, long-term
- Possible side effects:
  - Common: headache, dizziness, paraesthesia, dyspnoe, constipation, nausea, diarrhoea, tiredness, oedema
- Contraindications: no contraindications are relevant for the current patient
  
  Generally:
  - Hypersensitivity to nebivolol or to any of the excipients
  - Liver insufficiency or liver function impairment
  - Acute heart failure, cardiogenic shock or episodes of heart failure, decompensation requiring i.v. inotropic therapy
  - Sick sinus syndrome, including sino-atrial block
  - Second and third degree heart block (without a pacemaker).
  - History of bronchospasm and bronchial asthma
  - Untreated phaeochromocytoma
  - Metabolic acidosis
  - Bradycardia (heart rate < 60 bpm prior to start of therapy)
  - Hypotension (systolic blood pressure < 90 mmHg)
  - Severe peripheral circulatory disturbances
- Interaction with other medicinal products and other forms of interaction: no interactions are relevant for the current patient.
  
  Generally:
  - Class I antiarrhythmics (quinidine, hydroquinidine, disopyramide, lidocaine, mexiletine, propafenone): effect on atrio-ventricular conduction time and the negative inotropic effect may be potentiated.
  - Calcium channel antagonists of verapamil/diltiazem type: negative influence on contractility and atrio-ventricular conduction. Intravenous administration of verapamil in patients with beta-blocker treatment may lead to profound hypotension and atrio-ventricular block.
  - Centrally-acting antihypertensives (guanfacin, moxonidine, methyldopa, rilmenidine): concomitant use of centrally acting antihypertensive drugs may worsen heart failure by a decrease in the central sympathetic tonus (reduction of heart rate and cardiac output, vasodilation). Abrupt withdrawal, particularly if prior to beta-blocker discontinuation, may increase risk of “rebound hypertension”.


• As nebivolol metabolism involves the CYP2D6 isoenzyme, co-administration with substances inhibiting this enzyme, especially paroxetine, fluoxetine and quinidine may lead to increased plasma levels of nebivolol which is associated with an increased risk of excessive bradycardia and adverse events.

• Special warnings and precautions for use:
  ○ contains 141.75mg lactose per tablet

• Special precautions for storage, disposal and other handling: do not store above 25 °C.

NON-PHARMACOLOGICAL ADVICE

Blood pressure measurement:
At the beginning of the treatment daily blood pressure measurement is recommended. As the patient does not have a sphygmomanometer, the pharmacist may offer to perform the measures in the pharmacy. Readings should be recorded in a diary with dates and times or can be stored electronically in a downloadable smart phone application (e.g. „Laborom”, http://laborom.weebly.com/)

Lifestyle
• Dietary sodium restriction: Daily NaCl intake should be lowered below 5–6 g. Salt-rich foods (e.g. snacks, pre-cooked fast foods) should be avoided. Do not use salt at the dining table (substitute it with spices, herbs, and salt-free blends). Avoid mineral waters rich in sodium (e.g. Cserke Kincse, Mineralis, Mistral, Santé, Borsodi mineral water).

• Dietary alcohol restriction: moderate alcohol consumption does not affect hypertension. In males, moderate alcohol consumption means maximum 20–30 gram pure alcohol daily (equal to ~0.5–0.6 liter beer (~4-5 V/V%) or 2–4 dl wine (10–14 V/V%). Beer has high carbohydrate content which is not advisable for a patient who wants to loose weight.

• Other dietary changes: Consumption of vegetables, low-fat diary products, whole grain cereals, low-fat foods are recommended (DASH: Dietary Approaches to Stop Hypertension – diet). Fresh vegetables that are not rich in carbohydrate can be recommended. Mediterranean diet can be also recommended as it is rich in vegetables and fish (recommended twice weekly). Recommended books e.g. :

• Weight reduction: gradual reduction of body weight (0.5-1 kg weekly) is recommended until reaching ideal body weight. The DASH diet or mediterran diet will help patient loosing weight. Do not follow extreme and yo-yo dieting.

• Regular physical activity: regular physical activity has long-term beneficial effects on blood pressure, body weight and reduces the risk of cardiovascular events. Patient should start physical activity gradually and reach a frequency of 5-7 times weekly within a few months. Each time the duration should be a minimum of 30 minutes. Recommended sports: walking, jogging, swimming, cycling.
• Quit smoking: smoking is a standalone risk factor for stroke and acute myocardial infarction. Cessation of smoking is advised as soon as possible.

MONITORING

Regular blood pressure measurement can help patients to follow the effectiveness of therapy. Annual screening for hypercholesterinaemia, diabetes, hyperuricaemia is recommended.

SEEKING MEDICAL ADVICE

In case of any unusual signs/symptoms during medical treatment.

SOURCES

• The European Society of Hypertension (ESH) and of the European Society of Cardiology (ESC): 2013 ESH/ESC Guidelines for the management of arterial hypertension. *Journal of Hypertension*. July 2013
• Magyar Hypertonia Társaság irányleve: A hypertoniabetegség felnőttkori és gyermekkori kezelésének szakmai és szervezeti irányelvei 2009. [Hungarian Hypertension Society: Treatment guideline for hypertension in adults and children, 2009]
• Barna, István: Mit okozhat a magas vérnyomás? [What are the consequences of hypertension?] SpringMed Budapest 2007
TOPIC: TYPE 2 DIABETES MELLITUS – GLP1 AGONIST DISPENSATION

MEDICAL HISTORY

Patient
55-year-old obese male patient (BMI=33).

Current complaints
The patient comes from the outpatient diabetologic clinic to claim his prescriptions. His diabetologist modified the antidiabetic regimen with the introduction of a new medicine.

Other diseases
Hypertension, hyperlipidaemia, type 2 diabetes mellitus, nephropathy with impaired renal function (estimated GFR: 45 ml/min; moderate renal failure).

Medications, natural products, dietary/herbal supplements taken
- Regularly:
  - Diaprel MR (gliclazide) 60 mg: 1 tablet in the morning (for 4 years)
  - Atorva Teva (atorvastatin) 40 mg tablet: 1 tablet in the evening (for 3 years)
  - Normodipine (amlodipine) 5 mg: 1 tablet twice daily (for 3 years)
  - Cardura (doxazosine) XL 4 mg: 1 tablet in the morning (for 2 years)
  - Lyxumia (lixisenatide) 10 µg injection solution (newly prescribed medicine): once daily
- Occasionally:
  - Kreon 10 000 (amilase, lipase, protease) gastric acid resistant capsule
  - Algopyrin (metamizol sodium) tablet for headache

According to the guideline of the Hungarian Diabetologic Society if a 3 months long monotherapy (presently gliclazide) results in inappropriate HgA1c target value (above 8 mmol/l) then dual antidiabetic combination should be introduced.

Lifestyle, profession
IT personnel with a sedentary lifestyle. He follows a diabetic diet, his wife cooks for him based on special cook books (e.g. Dr. Baranyi, Éva; Dr. Winkler, Gábor; Bánvölgyi Györgyné: Cukorbetegség, túlsúly és étrendi kezelésük [Diabetes, obesity and their nutrition therapy], Golden book, 2002]). He does not have time for physical activity.

Allergies
No known allergies

Other relevant information
Because of the inadequate glycaemic control (last HgA1c value: 8,8%) the diabetologist initiated an add-on GLP-1 agonist to the existing gliclazide monotherapy and beside the medical, lifestyle and nutrition therapy. The prescribed product and dosage (10 µg Lyxumia) is the starter dose that should be administered once daily for 14 days.
PHARMACIST’S INTERVENTION

Decision on dispensing medication
In the present case the antidiabetic medications were dispensed with proper counselling.

Reason/background:
There was no contraindication to dispense medication.
Proper administration of the new product has to be shown to the patient.

Details of dispensed medication (based on SmPC)
LYXUMIA® 10 micrograms solution for injection

• Dosing regimen for adults: Lyxumia is administered once daily, within an hour prior to any meal of the day (preferably before the same (most convenient) meal every day). If a dose of Lyxumia is missed, it should be injected within the hour prior to the next meal. The dose should never be doubled.

• Method of administration: Lyxumia is to be injected subcutaneously in the thigh, abdomen or upper arm. Lyxumia should not be administered intravenously or intramuscularly. Use new needles for each administration.

• Onset of action: 0.5–1 hour

• Duration of therapy: 10 µg Lyxumia is administered once daily for 14 days as a starting dose. Normally, on Day 15 the maintenance dose is initiated with 20 µg Lyxumia injection solution (purple prefilled pen). As the patient has moderate renal impairment, the starting dose may not be increased.

• Contraindications: no contraindications are relevant for the current patient.
  o Generally:
  The only absolute contraindication is hypersensitivity to the active substance or to any of the excipients (e.g. metacresol). Use is not recommended (relative contraindication) in patients with severe renal impairment (creatinine clearance less than 30 ml/min), end-stage renal disease or in patients with severe gastroparesis. Caution should be exercised in patients with a history of pancreatitis.

• Possible side effects:
  o Very common: headache, nausea, vomiting, and diarrhoea. These gastrointestinal side effects are mostly mild and transient. Hypoglycaemia (in combination with a sulphonylurea and/or a basal insulin).
  o Common: hypoglycaemia (in combination with metformin), infections (influenza, upper respiratory tract infection, cystitis), dyspepsia, back pain, dizziness, somnolence.

• Interaction with other medicinal products and other forms of interaction: no interactions are relevant for the current patient.
  o Generally:
  The delay of gastric emptying with lixisenatide may reduce the rate of absorption of orally administered medicinal products. Patients receiving medicinal products of a narrow therapeutic index (coumarin products, digoxin, etc.) or medicinal products
that require careful clinical monitoring should be followed closely especially at the time of initiation of lixisenatide treatment. These medicinal products should be taken apart from lixisenatide. Antibiotics, gastro-resistant formulations containing substances sensitive to stomach degradation, or if rapid onset of action is necessary (e.g. pain killers) medications should be administered 1 hour before or 4 hours after lixisenatide injection.

- Special precautions for storage, disposal and other handling:
  - Store in a refrigerator (2–8°C). Do not freeze. Store away from the freezer compartment. After the first use the product should be stored below 30°C. Do not store with the needle attached. Keep the cap on the pen in order to protect from light.

- Warnings and precautions
  - This medicinal product is subject to additional monitoring. Healthcare professionals are asked to report any suspected adverse reactions.
  - In case of gastrointestinal disturbances (e.g. vomiting, nausea and diarrhoea) patient should take precautions (by drinking plenty of fluids) to avoid fluid depletion.

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**Patient should be advised on the followings:**

Before injecting the medicine the new pen should be activated to remove excess liquid. Activate the pen on the same day as your first injection. Before activation the window is orange, at it turns white when activation is completed.

**STEPS OF ACTIVATION**

- step 1: Pull off the pen cap and check the pen. Check the liquid. It should be clear and colourless with no particles. If not, do not use this pen. Check that the activation window is orange.
- step 2: Remove the protective seal from the outer needle cap and screw up the new needle to the pen. Pull off the outer and inner needle caps. Keep the outer needle cap - you will need it to remove the needle later.
- step 3: Pull the white injection button out firmly until it stops.
- step 4: Press the injection button all the way in (you may feel/hear a click). Hold it for 5 seconds to remove excess liquid. Capture the liquid in a bowl or with a tissue.
- step 5: Check that the activation window is now white. If yes, the pen is successfully activated.

**DAILY USE OF PEN**

- step 1: Pull off the pen cap and check
  - if activation window is white
  - if liquid is clear and colourless with no particles. Small air bubbles in the container are normal.
  - the number of doses in the pen. This is shown by the placement of the black plunger in the dose scale.
- step 2: Remove the protective seal from the outer needle cap and screw up a new needle to the pen. Pull off the outer and inner needle caps. Keep the outer needle cap - you will need it to remove the needle later.
- step 3: Pull the injection button out firmly until it stops.
- step 4: Grasp a fold of skin and insert the needle. Press the injection button all the way in and keep the button pressed for 5 seconds to get the full dose.
- step 5: Put the outer needle cap back on. Squeeze the outer needle cap to grip the needle and use it to unscrew the needle from the pen.
DIAPREL MR® 60 mg modified release tablets (60 mg gliclazide)

- Dosing regimen for adults: According to prescription instructions (60 mg daily).
- Method of administration: The daily dose should be taken orally at breakfast time. The patient should be asked if he follows this instruction. If a dose is skipped, there must be no increase in the dose taken next day.
- Onset of action: Not relevant, the patient has used this medication for years
- Duration of therapy: Continuous, long-term
- Possible side effects:
  Patient should be asked if he/she has experienced any side effects (e.g. how often do you have a hypoglycaemic episode?)
  Common: hypoglycaemic episode and gastrointestinal disturbances (including abdominal pain, nausea, vomiting, dyspepsia, diarrhoea or constipation). The gastrointestinal side effects can be avoided or minimised if gliclazide is taken with breakfast.
- Contraindications: no interactions are relevant for the current patient.
  o Generally:
    Hypersensitivity to gliclazide or sulphonylureas or to any of the excipients, galactose intolerance, Lapp lactase deficiency or glucose-galactose malabsorption, diabetic precoma and coma, diabetic ketoacidosis, severe renal or hepatic insufficiency, systemic miconazole treatment (available as an imported product in Hungary), lactation.
- Interaction with other medicinal products and other forms of interaction: no interactions are relevant for the current patient.
  o Generally:
    Agents which increase the risk of hypoglycaemia or hyperglycaemia (see table) interact with a concomittant anticoagulant therapy (eg. warfarin): anticoagulant effect ↑, gliclazide effect ↑
- Special precautions for storage, disposal and other handling:
  o This medicinal product does not require any special storage conditions
- Warnings and precautions:
  o The patient should be informed about the importance of regular monitoring of blood glucose levels. In case of concomitant anticoagulant therapy, anticoagulant effect should be monitored. Adjustment of the doses may be necessary.
NON-PHARMACOLOGICAL ADVICE

Regular physical activity is recommended to achieve good glycaemic and lipid control, and decrease blood pressure. Generally aerobic sports are recommended such as nordic walking, cycling, swimming, dancing, water gym. The intensity and duration depends on the cardiopulmonary capacity that should be quantified by the physician.
**MONITORING**

Checking adherence to and experience with the existing sulphonylurea therapy (Diaprel MR tablet). Regular self-monitoring of blood glucose and blood pressure. Regular laboratory control of serum lipids.

**SOURCES**

TOPIC: TYPE 2 DIABETES MELLITUS – BIGUANIDE DISPENSATION

MEDICAL HISTORY

Patient
63-year-old overweight male patient (BMI=28).

Current complaints
He visited an ophthalmologist due to visual disturbances. Retinopathy has been diagnosed and parallel blood glucose measurement was performed (it was 12 mmol/l two hours after meal). Previously nutrition therapy had been recommended for slightly higher glucose levels but the patient did not follow it (he followed dietary restrictions only preceding the scheduled laboratory controls). Now the GP has initiated antidiabetic therapy and the patient is present to the pharmacy with his first metformin prescription.

Other diseases
Hypertension, gout, benign prostatic hyperplasia

Medications, natural products, dietary/herbal supplements taken
• Regularly:
  o Covercard 5/5 (perindopril 5 mg, amlodipine 5 mg): 1 tablet in the morning
  o Alfuzosin Sandoz SR 5mg (alfuzosin): 1 tablet in the morning
  o Milurit 300mg (allopurinol): 1 tablet in the morning
  o Merckformin XR 500 mg (metformin): 1 tablet in the evening (newly prescribed medicine)
• Occasionally:
  o Brexin (piroxicam) 20 mg tablet for back pain

Lifestyle, profession
He is a pensioner. Formerly he was a teacher in a secondary school. He is living on his own. He consumes alcohol every day (3-4 dl red wine/day). He quitted smoking long ago. He cannot cook; he takes the lunch from a restaurant.

According to the guideline of the Hungarian Diabetologic Society when dietary management and exercise alone do not result in adequate glycaemic control, metformin monotherapy should be initiated (if no contraindication exists). Metformin may act via 3 mechanisms: it (1) reduces hepatic glucose production by inhibiting gluconeogenesis and glycogenolysis, (2) increases insulin sensitivity in muscles and (3) delays intestinal glucose absorption. It does not stimulate insulin secretion and therefore does not produce hypoglycaemia. It has neutral or positive effect on body weight.

Allergies
Bee sting allergy

Other relevant information
None
PHARMACIST’S INTERVENTION

Decision on dispensing medication
In the present case the prescription only medicine was dispensed

Reason/background:
There was no contraindication to dispense medication.
Information on the new medication should also be provided.

Details of dispensed medication (based on SmPC)

MERCKFORMIN XR® 500mg retard tablets (metformin 500mg)

- Dosing regimen for adults: According to prescription instructions (500 mg daily). In the future the GP may increase the dose according to laboratory results.
- Method of administration: The daily dose should be taken orally at dinner time. The tablet should not be crashed or chewed.
- Onset of action: 0.5–1 hour
- Duration of therapy: Continuous, long-term.
- Contraindications: no contraindications are relevant for the current patient.
  - Generally: hypersensitivity to the active substance or to any of the excipients, diabetic ketoacidosis, diabetic pre-coma, renal failure or renal dysfunction (creatinine clearance < 60 ml/min). Acute conditions with the potential to alter renal function such as dehydration, severe infection, shock, intravascular administration of iodinated contrast agents. Acute or chronic diseases which may cause tissue hypoxia such as: cardiac or respiratory failure, recent myocardial infarction and shock. Hepatic insufficiency, acute alcohol intoxication, alcoholism and lactation.

Metformin use in chronic renal diseases:
The need of extending the present conservative cut-off value (<60 ml/min/1.73 m² creatinin clearance, i.e. moderate renal dysfunction) for contraindication of metformin use continuously emerge. Several clinical guidelines (e.g. Canadian, British, Australian) enable lower dose metformin use in patients with stabilé renal dysfunction (30-60 ml/min/1.73 m² creatinine clearance) with regular laboratory control. Hungarian colleagues (see literature) made exact recommendations for metformin use in patient with moderate renal dysfunction. Creatinine levels should be determined before initiating metformin treatment and regularly afterwards.

- Possible side effects:
  - Very common: Gastrointestinal disorders (nausea, vomiting, diarrhoea, abdominal pain and loss of appetite). These undesirable effects occur most frequently during initiation of therapy and resolve spontaneously in most cases. With the evening ingestion side effects can be minimised. Other measures to prevent gastrointestinal disturbances is slow dose augmentation, or in case of higher doses, splitting up of doses and taking them during meals.
  - Common: Taste disturbances
• Interaction with other medicinal products and other forms of interaction: no interactions are relevant for the current patient.
  o Generally:
  Alcohol, iodinated contrast agents: due to increased risk of lactic acidosis concomitant use should be avoided. Due to the possibility of dehydration, concurrent diuretic use (particularly high ceiling diuretics) should be cautiously administered. Glucocorticoids (systemic and local routes), beta-2-agonists, and diuretics have intrinsic hyperglycaemic activity. Inform the patient and perform more frequent blood glucose monitoring, especially at the beginning of treatment.

• Special precautions for storage, disposal and other handling:
  o This medicinal product does not require any special storage conditions.

• Warnings and precautions
  o The patient should be informed that the outer layer of the tablet can occur in the faeces and that this is a normal phenomenon.
  o Draw patients’ attention to the necessity of regular renal function control
    - at least annually in patients with normal renal function,
    - at least two to four times a year in patients with serum creatinine levels at the upper limit of normal and in elderly subjects.

Decreased renal function in elderly subjects is frequent and asymptomatic. Special caution should be exercised in situations where renal function may become impaired, for example when initiating antihypertensive therapy or diuretic therapy and when starting therapy with a non-steroidal anti-inflammatory drug. Draw patients’ attention to avoid excessive alcohol intake, prolonged fasting and extreme sport activities to reduce the potential for lactic acidosis.

• Explain to the patient that he should inform the healthcare personnel about metformin use in case radiologic examinations or surgeries are planned. (As the intravascular administration of iodinated contrast materials and certain anaesthesia types can lead to renal dysfunction and metformin accumulation. In such cases metformin use should be suspended before and reinstated only when renal function has returned to baseline value.)
Lactic acidosis is a rare, but serious metabolic complication (with high mortality in the absence of prompt treatment). It has two major forms: type A and type B. Type A is caused by hypoperfusion and tissue hypoxia (COPD, severe anaemia, severe circulatory failure) while type B is due to metabolic factors (drug-induced, inherited metabolic diseases).

According to the literature both metformin and sulphonylurea use can rarely result in lactic acidosis (4-8 cases/100 000 patient-year), but diabetes alone also makes patients prone to lactic acidosis (due to micro- and macrovascular complications and consequent tissue hypoxia).

Many symptoms are not specific, including nausea, vomiting, abdominal pain, muscle cramps, severe generalised myasthenia, dyspnoe, hyperventillation (Kusmmaul breathing), cyanosis, hypothermia, which may delay diagnosis.

Diagnostic laboratory findings are decreased blood pH, plasma lactate levels above 5mmol/l, and an increased anion gap and lactate/pyruvate ratio.

If metabolic acidosis is suspected, metformin hydrochloride should be discontinued and the patient should be hospitalised immediately.

NON-PHARMACOLOGICAL ADVICE

Regular physical activity is recommended to achieve good glycaemic and lipid control, and decrease blood pressure. Generally aerobic sports are recommended such as nordic walking, cycling, swimming, dancing, water gym. The intensity and duration depends on the cardiopulmonary capacity that should be quantified by the physician.

The patient should be encouraged to lose weight. It is not likely that a normal restaurant provides diabetic lunch. Restaurants offering diabetic meals should be explored. On the webpage of the Hungarian Diabetic Society patients can find and download educational materials on diabetic diet. Patient should be encouraged to join a local patient association/club and ask for dietician advice.

The blood glucose lowering effect of alcohol (dry wine) and its interaction with metformin should be explained to the patient. The patient should be encouraged to reduce/quit alcohol intake.

MONITORING

Regular measurement and recording of blood glucose and blood pressure. Checking lipid levels is also recommended.

SOURCES

- A diabetes mellitus kórismézése, a cukorbetegek kezelése és gondozása felnőttkorban. A Magyar Diabetes Társaság szakmai irányelve, 2014. [Diagnosis,


TOPIC: PNEUMOCOCCUS VACCINE DISPENSATION TO AN ADULT PATIENT

MEDICAL HISTORY

Patient
75-year-old slim female patient

Current complaints
The patient has no complaints. She asks the pharmacist’s opinion on the prescribed vaccine (Prevenar 13).

Other diseases
Hypertension, chronic obstructive pulmonary disease (COPD)

Medications, natural products, dietary/herbal supplements taken

- Regularly:
  - Tensart (valsartan) 80 mg: 1 tablet in the morning (for 3 years);
  - Spiriva (tiotropium): 1 puff in the morning (for 5 years)
  - Dimenio (salmeterol, fluticasone): 1 puff twice daily (for 2 years)
  - Ventolin (salbutamol): if needed (for 5 years)
- Occasionally: Supradyn (multivitamin) course during the winter months

Indication of pneumococcal vaccine according to the guideline of the National Centre for Epidemiology:
All patients over 50 years of age.
Patients who are more susceptible to serious pneumococcal infections due to their chronic diseases, including sickle cell anaemia, pulmonary diseases (COPD, asthma), chronic cardiovascular, renal, liver diseases (including alcohol induced liver diseases) and diabetes, immunosuppressed patients (eg. transplanted patients, those on chemotherapy, those with autoimmune diseases receiving immunosuppressive treatment (e.g. corticosteroids, biologicals). Anatomic or functional asplenia, (splenectomy in the medical history), liquor leakage.
Those after inner ear operation (e.g. cochlear implantation) and cranial trauma.
Smokers – irrespective of age and underlying co-morbidities.

Lifestyle, profession
Pensioner, formerly she was an X-ray assistant. She had been a heavy smoker for twenty years (10-15 cigarettes/day), but she quit a few years ago. She eats regularly and moderately.

Allergies
Penicillin (Penicillin G), diclofenac (Voltaren)
**Other relevant information**

She is hesitating on claiming the pneumococcal vaccine (Prevenar 13), and asks for the pharmacist’s opinion. In the previous years she received the seasonal influenza vaccine only, she does not understand why it is not enough now, why the GP has prescribed her one more vaccine.

**PHARMACIST’S INTERVENTION**

**Dispensing medication**

The prescribed medication can be dispensed.

**Reason**

The patient should be encouraged to claim the Prevenar 13 vaccine. She is susceptible to serious pneumococcal infections due to many reasons (age, COPD). The patient should be informed that the use of conjugated pneumococcal vaccine in adults has been introduced only recently (it has been recommended by the guideline of the National Centre for Epidemiology since 2012; previously it had been recommended for children only). The conjugated vaccine is superior to polysaccharide vaccines (e.g. Pneumovax 23), therefore adults should be immunized with the conjugated vaccine first (see notes below).

The followings should be consulted to the patient:

- **Increased vulnerability due to age and underlying co-morbidities**
  Immune functions gradually deteriorate by natural aging (immunosenescence) which results in more frequent infections and accompanied by higher lethality. The higher incidence of lower respiratory tract infections is the best known complication. In the elderly structural pulmonary damage also contributes to more frequent and more serious pneumonia beside immunosenescence (decreased mucociliar clearance, decreased thorax volume, respiratory muscle weakness, deterioration of cough reflex). In this patient increased pulmonary damage is present due to the COPD, which further enhances vulnerability to infections.

- **Incidence and importance of pneumococcal infections**
  Pneumococcal diseases are a common cause of morbidity and mortality worldwide, especially in young children and the elderly. In adults it appears most commonly as pneumococcal pneumonia. Worldwide mortality related to pneumococcal disease exceeds substantially that of influenza (1.6 million vs. 250–500 thousands). According to national data one fifth of hospitalized patients with pneumonia (including pneumococcal pneumonia) die. The lethality of serious pneumococcal infections has not changed significantly in the past 60 years (it is around 12%), despite the development of intensive care and antibiotic therapy. Those surviving sepsis has lower life expectancy and quality of life.

- **Effectiveness and limitations of the vaccine**
  Prevenar 13 will only protect against Streptococcus pneumoniae serotypes included in the vaccine. These 13 serotypes are responsible for 50–76% of invasive pneumococcal
infections in elderly. Moreover, as with other vaccines, Prevenar 13 immunisation may not always result in protection (immunogenity is not 100%).

Details of dispensed medication (based on SmPC)

PREVENAR® 13 suspension for injection (Pneumococcal polysaccharide serotypes 1,3,4,5,6A,6B,7F,9V,14,18,19A,19F,23F conjugated to protein)

- Dosing regimen for adults: One single dose.
- Method of administration: The vaccine should be given by intramuscular injection. The preferred sites are the deltoid muscle of the upper arm in adults. In individuals with thrombocytopenia or any coagulation disorder that would contraindicate intramuscular injection, the vaccine can be administered subcutaneously.
- Onset of action: approximately two weeks after administration.
- Duration of therapy: The need for revaccination with a subsequent dose of Prevenar 13 has not been established. Due to immune memory conjugated vaccines provide long-term protection (in contrast to polysaccharide vaccines)
- Contraindications: no contraindications are relevant for the current patient.
  - Generally: Hypersensitivity to the active substances or to any of the excipients (e.g. polysorbate 80, aluminium phosphate or to diphtheria toxoid). As with other vaccines, the administration of Prevenar 13 should be postponed in subjects suffering from an acute, severe febrile illness. However, the presence of a minor infection, such as a cold, should not result in the deferral of vaccination.
- Possible side effects:
  - Very common: decreased appetite, headaches, diarrhoea; rash, chills; fatigue; vaccination-site erythema and induration; vaccination-site pain/tenderness, arthralgia; myalgia, limitation of arm movement
  - Common: pyrexia, vomiting
- Interaction with other medicinal products and other forms of interaction: no interactions are relevant for the current patient.
  - Generally: Prevenar 13 may be administered concomitantly with the seasonal trivalent inactivated influenza vaccine (e.g. Fluarix) at different vaccination sites.
- Special precautions for storage, disposal and other handling:
  - Store in a refrigerator (2°C–8°C). Do not freeze. Prevenar 13 is stable at temperatures up to 25°C for four days. At the end of this period Prevenar 13 should be used or discarded.
- Warnings and precautions:
  Prevenar 13 must not be administered intravenously. Appropriate medical treatment and supervision should always be readily available in case of a rare anaphylactic event following the administration of the vaccine. The patient should stay close to the doctor’s office 0.5–1 hour after vaccine administration.
NOTE

Regardless of prior pneumococcal vaccination status, if the use of pneumococcal polysaccharide vaccine is considered appropriate, Prevenar 13 should be given first. After two months the protection should be extended to other serotypes with the polysaccharide vaccine (Pneumovax 23).

SOURCES


- Ludwig, Endre; Serhat Ünal; Miron Bogdan; Roman Chlibek; Yavor Ivanov; Roman Kozlov; Harmut Lode; Mészner; Zsófia; Roman Prymula; Galia Rahaw; Anna Skoczynska; Ivan Solovic; Abdullah Sayiner. Regionális szakértői állásfoglalás a felnőttek optimális pneumococcus vakcinációjára vonatkozóan. A felnőttkor pneumococcus betegségre vonatkozó 2011-es konszenzus frissítése. [Regional expert advice on pneumococcal vaccination of adults. Update of the consensus statement of 2011.] LAM Extra Háziorvosoknak 2014;6(4):233-237.


TOPIC: ACUTE TONSILLOPHARYNGITIS

MEDICAL HISTORY

Patient
34-year-old female patient with normal body weight (BMI=24)

Current complaints
She has a sore throat since yesterday evening. She also has a hoarse voice, rhinorrhea and stuffed nose. Probably she got a cold during the weekend shopping yesterday due to air-conditioning. She has no fever, abdominal pain, diarrhoea, cough, dysphagia or tender anterior cervical lymphadenopathy.

Other diseases
Seasonal allergic rhinitis (ragweed allergy).

Medications, natural products, dietary/herbal supplements taken
• Regularly: Rezia 3 mg/0.02 mg (3 mg drospirenon and 0.02 mg ethyniloestradiol) coated tablet: 1 tablet daily (for 2 years)
• Occasionally: Xyzal (levocetirizine) 5 mg coated tablet

Lifestyle, profession
Shop assistant. She lives a sporty life, she regularly cycles to work. Occasionally she smokes and consumes small amounts of alcohol. She has a low fat nutrition.

Allergies
paracetamol (Panadol)

Other relevant information
None

PHARMACIST’S INTERVENTION

Based on the symptoms (see box below) viral tonsillopharyngitis can be suspected. For viral tonsillopharyngitis symptomatic treatment (throat disinfection, analgesia, decongestant) can be recommended. In the present case the pharmacist dispensed a benzydamin lozenge which has antiseptic, local anaesthetic and – being an NSAID – analgesic effect. For the rhinorrhea decongestants can be recommended. Nasal ointment and inhalation can also be recommended.

Tonsillopharyngitis of adults are viral infections in 90% of cases. Symptoms referring to bacterial aetiology (Centor criteria):
- fever (1 point)
- tender anterior cervical lymphadenopathy (1 point)
- absence of cough (1 point)
- tonsillar exudates (1 point)
Patient with zero or 1 point are unlikely to have Group A β-hemolytic streptococcus (GABHS) tonsillopharyngitis.
Details of dispensed medication (based on SmPC)

TANTUM VERDE® eucalyptus taste 3 mg lozenges

• Dosing regimen for adults: one lozenge 3-4 times daily
• Method of administration: Oropharyngeal use. Lozenge should be dissolved slowly in the mouth. It should not be swallowed or chewed.
• Onset of action: within 5–10 minutes
• Duration of therapy: maximum for 7 consecutive days
• Contraindications: no contraindications are relevant for the current patient. Generally: known hypersensitivity to benzydamine or to any of the excipients. Benzydamine use is not advisable in patient with hypersensitivity to salicylic acid or other NSAIDs. Bronchospasm may be precipitated in patients suffering from or with a previous history of bronchial asthma. Caution should be exercised in these patients.
• Possible side effects: This medicine has no very common or common side effect.
• Interaction with other medicinal products and other forms of interaction: This medicine has no known interactions.
• Special precautions for storage, disposal and other handling: Do not store above 30°C.

WARNINGS AND PRECAUTIONS:
The medicinal product contains Isomalt (E 953) thus patients with rare hereditary problems of fructose intolerance should not take this medicine.

Isomalt is a sugar alcohol. It is an equimolar mixture of two disaccharides, each composed of two sugars: glucose and mannitol and also glucose and sorbitol. Sorbitol is the precursor of fructose.

RHINATHIOL® 1 mg/ml nasal spray (xylometazoline 1 mg/ml)

• Dosing regimen for adults:
  1–2 spray (puff) into each nostril, 1 to 3 times daily as needed. Do not exceed 2 puffs per administration and 6 puffs daily per nostril.
• Method of administration:

  Priming (activation) of pump:
  To prime the pump before it is used for the first time, the bottle should be held vertically and the bottom of the pump should be pressed upward to the doser with the thumb. Repeat 2-3 times until a full spray is released. Once primed the pump will normally remain charged throughout regular daily treatment periods (The pump should not be primed before each daily dose). Should the spray not be ejected during the full actuation stroke or if the product has not been used for longer than 6 days, the pump will need to be re-primed with 2-3 actuations as initially performed.
Administration:
Blow your nose gently before using the spray. To administer, the nozzle should first be carefully placed into the nostril while the patient’s head is in the upright position, then the pump’s bottom should be firmly pressed upward to the dozer nozzle. Nasal breathing during the process enhance optimal distribution of the medicine.

- Onset of action: within 5–10 minutes
- Duration of therapy: maximum 7 consecutive days
- Contraindications: no contraindications are relevant for the current patient. Generally: Hypersensitivity to xylometazoline hydrochloride or any excipients (e.g. benzalconium chloride). After transnasal or trans-oral surgery (e.g transsphenoidal hypophysectomy). Concomitant monoamine oxidase inhibitors (MAO inhibitors) and tricyclic antidepressants (TCA) use or MAO inhibitor or TCA use in the past two weeks.

Possible side effects:
Their frequencies are not reported in the SmPC. Locally: nasal mucous irritation (mainly in sensitive patients), nasal dryness/nasal discomfort.
Long term/chronic use: rebound hyperaemia, rebound congestion; afterwards: rhinitis medicamentosa and nasal mucous atrophy.

Interaction with other medicinal products and other forms of interaction: no interactions are relevant for the current patient. Due to minimal bioavailability interactions are not likely. As a defensive measure concomitant use with monoamine oxidase inhibitors (MAO inhibitors) and tricyclic antidepressants (TCA) is contraindicated.

- Special precautions for storage, disposal and other handling: Do not store above 25 °C.

- Warnings and precautions:
The product should be used for a maximum of seven consecutive days in order to avoid a rebound effect in form of nasal congestion and drug-induced rhinitis, which may lead to physical drug dependence and/or atrophy of the nasal mucosa.

Rhinitis medicamentosa (rebound rhinitis): chronic oedema (stuffed nose) without rhinorhea or sneezing that develops due to continuous/frequent use of local vasoconstricting agents. Similar symptoms induced by systemic medications (oral contraceptive, psychotropic agents, antihypertensive) are called drug induced rhinitis.

Unguentum nasale FoNo VII (boric acid, eucalypt oil, peppermint oil)
- Dosing regimen for adults and : twice daily (before getting up and after going to bed)
- Method of administration: spread gently into the nostrils in a thin layer
- Onset of action: within 5–10 minutes
- Duration of therapy: usually 3-5 days. After 5-6 days, take a few days break.
- Contraindications: no contraindications are relevant for the current patient. Generally: Hypersensitivity to ingredients (boric acid, menthol), neonates, infants.
• Possible side effects: The product contains cetyl-stearil-alcohol and lanolin-alcohols, which can cause local skin irritation (eg.: contact dermatitis).
• Interaction with other medicinal products and other forms of interaction: The product has no known interactions.
• Special precautions for storage, disposal and other handling: Store in a refrigerator (2–8°C).
• Warnings and precautions: None

NON-PHARMACOLOGICAL ADVICE

„Sore throat diet“: avoid spicy foods, smoking, alcohol, acidic fruits and drinks (tomato, orange, grapefruit, including sparkling beverages).

Gargle with NaCl solution: hyperisotonic NaCl solution is antiseptic. Dissolve one teaspoon of salt in 1 dl water and gargle three times daily.

Inhalation: Inhalation of warm moist steam (chamomile infusum, or 10 drops of aetheroleum pro inhal. FoNoVII added to 1 litre of hot water) can aid rhinitis symptoms.

SEEKING MEDICAL ADVICE

If symptoms do not attenuate or they get worse after 3 days (eg. fever above 39°C, intense throat-, ear- or forehead pain, racking cough, dyspnoe, otoblenorrhoea, painful lymph nodes, or white or yellow coating or patches on the tonsils).

Immunosuppressed patients or those with endocarditis, rheumatic fever or artificial heart valve should seek medical advice from the start of symptoms.

Clarify:
patient’s age
co-morbidities and medicines used for them
type and duration of throat pain
accompanying symptoms: fever, diarrhoea, swollen cervical lymph nodes, conjunctivitis, coughing, ear pain, dyspnoe, forehead pain
drug allergy

SOURCES

• UpToDate database. Wendy Stead: Symptomatic treatment of acute pharyngitis in adults. This topic last updated: Apr 08, 2014.
• Kovács, István: Kezelési megfontolások felső légúti hurutos megbetegedések esetén, különös tekintettel az OTC-szerekre. [Management considerations in case of upper respiratory tract infections, particularly with OTC medications] available at Orvosi tudásbázis http://orvositudasbazis.hu


• National Institute of Pharmacy and Nutrition; Drug Database; Summary of Product Characteristics of Tantum verde lozenge; URL: http://www.ogyei.gov.hu/gyogyszeradatbazis/ [Accessed: April 2015]


TOPIC: CHRONIC CONSTIPATION

MEDICAL HISTORY

Patient
45-year-old female patient, slightly obese (BMI=28).

Current complaints
The patient complains of hard stools and difficulty in bowel movements with straining in the past few months. Despite normal liquid intake (2 litres per day), the symptoms have not been relieved.

Other diseases
Hypertension

Medications, natural products, dietary/herbal supplements taken
- Regularly: Ednyt HCT (for 5 years).
- Occasionally: None
- What has been done to relieve the complaints? – Salty mineral water did not help.

Lifestyle, profession
She is a full-time office worker, desk-bound 8 hours per day. According to the patient, she follows normal Hungarian cuisine; she consumes fruits once daily and is not really keen on vegetables. The patient is non-smoker, she drinks alcohol occasionally.

Allergies
No known allergies.

Other relevant information
None

PHARMACIST’S INTERVENTION

Decision on dispensing medication
Sodium picosulphate (Guttalax drops®) was dispensed to the patient.

Reason/background
The patient was not complaining of the frequency, but the consistency of stools, besides she was seeking for the easiest way of administration. This medication form is advantageous as it can be tailored individually.

There are numerous medications which may cause constipation as a side effect. For example: tricyclic antidepressants (TCA), statins, Ca-channel-blockers (e.g. verapamil), opiates, iron supplements, antihistamines, calcium compounds, etc., so the pharmacist should ask the patient if any of these medications are taken.

Laxative abuse (chronic, excessive use of laxatives) may trigger paradox constipation.
Details of dispensed medication (based on SmPC)

**GUTTALAX® 7.5 mg/ml drops (7.5 mg/ml sodium picosulphate monohydrate)**

- **Dosing regimen (single dose and maximum daily dose):** 10–20 drops per day. Regimen should be started with lower doses and increased gradually if needed. The maximum dose is 20 drops per day.
- **Method of administration:** Guttalax drops should be taken with cc. 250 ml of water before bedtime.
- **Onset of action:** 8–12 hours
- **Duration of therapy:** maximum 10 consecutive days.
- **Contraindications:** no contraindications are relevant for the current patient.
  - Generally: ileus; acute surgical abdominal conditions associated with severe abdominal pain or fever, such as acute appendicitis; acute inflammatory bowel disease; nausea and vomiting; severe dehydration.
- **Possible side effects:** Very common: diarrhoea; Common: abdominal cramps, pain and discomfort.
- **Interaction with other medicinal products and other forms of interaction:** no interactions are relevant for the current patient.
  - Generally: Care should be taken in case of patients already receiving drugs which may be associated with hypokalaemia (such as diuretics or corticosteroids, or drugs where hypokalaemia is a particular risk i.e. cardiac glycosides). Antibiotics may decrease the laxative effect of Guttalax drops.
- **Special precautions for storage, disposal and other handling:** None

**EDNYT HCT® 20 mg/12.5 mg tablets (enalapril + hydrochlorothiazide 20mg/12.5 mg tablets)**

- **Dosing regimen (single dose and maximum daily dose):** according to the physician’s instructions, 1 tablet daily.
- **Method of administration:** orally
- **Onset of action:** weeks.
- **Duration of therapy:** continuous, long-term.
- **Contraindications:** no contraindications are relevant for the current patient.
  - Generally: Severe kidney impairment, severe liver failure.
- **Possible side effects:** Very common: blurred vision, dizziness, cough, weakness; Common: headache, orthostatic hypotension.
- **Interaction with other medicinal products and other forms of interaction:** no contraindications are relevant for the current patient.
  - Generally: Non-steroidal anti-inflammatory drugs (NSAIDs) may reduce the effect of diuretics and other antihypertensive drugs. The co-administration of NSAIDs (including COX-2 inhibitors) and ACE inhibitors exert an additive effect on the increase of serum potassium, and may result in a deterioration of renal function.
- **Special precautions for storage, disposal and other handling:** None
NON-PHARMACOLOGICAL ADVICE

Diet

• It is recommended to eat three meals per day, as well as sufficient amount of fiber intake. The patient should be given a ‘fiber-content information sheet’ to clarify the intake by dietary resources (20–30 g daily fiber intake is advised). Regular consumption of fruits is highly suggested, preferably several times a day. Pear, quince, plum and small grain (pome) fruits (e.g. raspberry, blackberry, currant) have high fiber content, but all kind of fruits are suitable for fibre intake. Homemade jam, muesli bar, oat-flakes, whole-meal flour, dried fruit consumption may also be beneficial.

• Among dairy and fermented dairy products yogurt, junket (yogurt with fruits), kefir, and curd may be helpful.

• If possible, brown, seedy bread should be chosen instead of white bread. Brown breads are made from whole grains (containing the skin/peel of the crop). Instead of white refined flour, brown flour (graham, rye, German wheat, etc.) is recommended.

• Brown rice has a higher fiber content than white rice.

• Hot, spicy foods can irritate the intestinal mucous membrane. Mild spices, fresh or dried green herbs are preferred for seasoning instead.

Liquid intake

• Daily liquid intake should reach 2–3 litres in case of constipation. Since the patient is currently taking a thiazide diuretic, in her case it is not appropriate to raise the fluid intake.

Lifestyle

• Physical activity has motility-enhancing effect, therefore a daily walk or jogging is recommended instead of driving a car or using public transportation.

• If lifestyle instructions are not enough, OTC products can be advised. However, those are only recommended for a short period of time, not for chronic use.

Blood pressure

• Blood pressure control: see Hypertension section.

MONITORING

Medical advice is needed if bowel movements can be maintained only by regularly taken laxatives, as the background of constipation should be investigated. Prolonged or excessive use of Guttalex drops may result in fluid and electrolyte disorders or hypokalaemia. For these reasons, Guttalex drops should not be taken as a routine laxative (no more than 10 days) except under medical supervision.
SEEKING MEDICAL ADVICE

It is important to draw the patient's attention to the fact that if constipation is associated with alternating diarrhoea, rectal bleeding or cramping abdominal pain, unwanted weight loss (in the past 6 months) the patient should contact her family doctor. In addition, if digested or fresh blood is detected in the stools, medical help is needed. Symptoms listed above may refer to a tumour or lesion which must be investigated.

When should the patient be referred to the doctor?

- If the complaints last for more than 10 days without easing.
- Patients with long-term laxative use if there is no medical supervision, mainly in case of elderly who suffer from piles, or if the patient is over 40 and experiences a sudden change of bowel habit.
- Children under the age of 1 year.
- If abdominal cramps or severe pain is present.
- If no intestinal gas can pass.
- In case of altering constipation and diarrhoea, if not examined by a physician before
- Uncommon concomitant symptoms (bleeding, vomiting, chronic pain, malaise, fever)

SOURCES

- The official website of The electronic Medicines Compendium (eMC) https://www.medicines.org.uk/emc/medicine/6402 [Accessed 13.06.2015.]
- Laurence Brunton, Bruce Chabner, Bjorn Knollman: Goodman & Gilman’s The Pharmacological Basis of Therapeutics, 11th edition. (The McGraw-Hill Companies, Inc.) Section VI, chapter 37, pp. 633–653. DOI: 10.1036/0071443436
TOPIC: ACUTE DIARRHOEA

MEDICAL HISTORY

Patient
A six-year-old skinny boy.

Current complaints
The parent of the patient complains about diarrhoea, having thin, watery stools. The problem started about 24 hours ago and since it he has had 4-5 stools. During the past few days he was at the beach, where he had some meals. He has had mild nausea that has gone.

Other diseases
No other known diseases.

Medications, natural products, dietary/herbal supplements taken
• Regularly: None
• Occasionally: None
• What has been done to relieve the complaints? Medicinal charcoal (carbo activatus) was taken 3 times, approximately in every 3 hours.

Lifestyle, profession
He is an elementary school child.

Allergies
Penicillin

Intestinal motility inhibitors (anti-peristaltic drugs) are contraindicated in the following cases: antibiotic-associated diarrhea, infectious-type diarrhea and in children under 6 years of age.

PHARMACIST’S INTERVENTION

Decision on dispensing medication
In this situation medicinal charcoal (CRALEX hard capsule®) was dispensed to the patient.

Reason/background
Based on the medical history, infectious-type diarrhoea can be suspected. Therefore anti-peristaltic drugs (e.g. loperamid, diphenoxylate) are contraindicated. Medicinal charcoal absorbs the extra amount of water and toxins as well. It has been well tolerated by the child, therefore the therapy can be continued.

OTC medications which may also be considered in such a case: diosmectit (Smecta powder) and ‘Bolus Adstringens’ tablets (albumin tannate, bismuth subgallate) because of their adstringent effect.
Details of dispensed medication (based on SmPC)

**CRALEX® hard capsule (200 mg activated charcoal per capsule)**

- **Dosing regimen** (single dose and maximum daily dose): for children between the age of 6 and 9 years: the maximum dose is 2–3 capsules 3 times daily.
- **Method of administration**: it should be taken with a glass of water by mouth.
- **Onset of action**: a few hours.
- **Duration of therapy**: until diarrhoea ceases.
- **Contraindications**: no contraindications are relevant for the current patient. Generally: ileus, colitis ulcerosa.
- **Possible side effects**: gastro-intestinal symptoms (constipation, vomiting) may occur, but it is very rare. Use of Cralex® can dye stools black.
- **Interaction with other medicinal products and other forms of interaction**: no interactions are relevant for the current patient. Generally: Care should be taken with patients receiving tannin. The medicine has large absorbing effect; therefore any other medications should be administered 2 hours before or 2 hours after Cralex® capsules.
- **Special precautions for storage, disposal and other handling**: None

**NON-PHARMACOLOGICAL ADVICE**

**Liquid intake**

- **Liquid intake is essential and must be applied in addition to any other therapy!** Oral rehydration fluids should be given to children in 50 to 100 ml/kg/daily amount, depending on the hydration state.
- **Powder for oral rehydration fluid** is available in the pharmacy, but can be made easily at home. Ingredients: 1 teaspoon (tsp) of NaCl, 1 tsp. of sodium-bicarbonate and 4 tsp. of sugar dissolved in 1 litre of water. The full amount of liquid should be consumed in small, mouthful portions. The taste can be improved with fruit juices.

**Diet**

- **Fasting is not required, but avoid overloading the GI track with heavy meals.**
- **Fibre-rich foods improve the consistency of stool; therefore small amounts of easily digestible, starchy foods are recommended.** For example BRAT(T) diet: Bananas, Rice, Apple sauce, Toast, Tea. Grating of fresh apples increases the amount of pectin released. Boiled potatoes, corns and fat-free crackers are also recommended.
- **Avoid dairy products, alcohol, coffee, carbonated soft drinks, spicy foods, fat-rich foods.**

**Probiotics**

- **Probiotics are essential for restoring the intestinal flora, but can also be used for prevention.** In case of infectious-type diarrhoea, Normaflore oral suspension or hard
capsules (Bacillus clausii spores) and Enterol powder or hard capsules (Saccharomyces boulardii cells) are recommended. These are registered as medicines.

- Moreover, for acute diarrhea, Lactiv (and Lactiv Plus) or Protexin Restore are also widely studied and used dietary supplements.

**What are the main questions to clarify in case of acute diarrhoea?**

- Age of patient.
- Onset of diarrhoea.
- Frequency of bowel movement, characteristics of stool (is there any mucus, pus or blood in it?)
- Associated symptoms: cramps, nausea, vomiting, fever.
- Medications: any recently added or started meds, preparations? What has been taken for the diarrhoea?
- Recent travels (where and for how long?)
- Previous or current antibiotic therapy, hospitalization.
- Any previous GI symptoms.

**MONITORING**

If symptoms worsen or do not improve while using the drug, the patient should be asked to return to the pharmacy. Inform the patient when he/she should seek medical advice or visit the family doctor (see below).

**SEEKING MEDICAL ADVICE**

The patient must see the family doctor if:

- The symptoms do not improve within the next 24 hours.
- Blood or mucus was noticed in stool.
- In case of high fever or severe abdominal pain.
- When there are signs of dehydration/weight loss reaching 5% of the body weight.
- If vomiting occurs.

**SOURCES**

• Laurence Brunton, Bruce Chabner, Bjorn Knollman: Goodman & Gilman’s The Pharmacological Basis of Therapeutics, 11th edition. (The McGraw-Hill Companies, Inc.) Section VI, chapter 37, pp. 629–653. DOI: 10.1036/0071443436
TOPIC: GASTRO-OESPHAGIAL REFLUX DISEASE (GERD)

MEDICAL HISTORY

Patient
A 35-year-old, athletic male patient (BMI=23).

Current complaints
He is complaining of biting epigastric pain, waving in intensity, appearing several times a day. He has a history of previous heartburn episodes, but his symptoms have been deteriorating in the last 2 months and have become persistent.

Other diseases
No other known diseases.

Medications, natural products, dietary/herbal supplements taken
• Regularly: None.
• Occasionally: acetyl-salicylic acid is taken for occasional headaches.
• What has been done to relieve the complaints? Antacid was taken (Rennie chewing tablet which contains calcium carbonate, magnesium carbonate) 5-6 times daily, but it is no more effective.

Lifestyle, profession
He works as a senior IT specialist. He handles work-related stress with regular evening run. He has been trying to quit smoking; he drinks 3 cups of coffee per day and consumes alcohol occasionally.

Allergies
No known allergies.

PHARMACIST’S INTERVENTION

Decision on dispensing medication
In this case famotidine tablet (Quamatel mini®) was dispensed to the patient.

Reason/background
Famotidine is an acid secretion inhibitor: a reversible H2-receptor blocker drug. Its once-daily administration is comfortable for the patient.

Over-the-counter medications available for reflux disease:
1. Acid neutralisers: antacids
2. Acid production inhibitors
   histamine H2-receptor-blockers (famotidine)
   proton-pump inhibitors (PPI) (pantoprazole, esomeprazole)
3. Mucous membrane resistance enhancers
   sucralfate, colloidal bismuth compounds
Details of dispensed medication (based on SmPC)

QUAMATEL MINI® 10 mg film-coated tablets (10 mg famotidine per tablet)

- Dosing regimen (single dose and maximum daily dose): one tablet to be taken for the relief of symptoms. No more than two tablets to be taken within 24 hours.
- Method of administration: it should be taken by mouth with a glass of water.
- Onset of action: 1–2 hours.
- Duration of therapy: the maximum continuous treatment period is 6 days. The patient should not purchase a second pack of tablets without the advice of a pharmacist or doctor.
- Contraindications: no contraindications are relevant for the current patient.
  Generally: moderate or severe renal failure (serum calcium should be monitored in such cases); severe hepatic impairment.
- Possible side effects: the most common side effects are headaches, nausea and diarrhoea.
- Interaction with other medicinal products and other forms of interaction: no interactions are relevant for the current patient.
  Generally: Quamatel mini® may decrease the absorption of medicines strictly related to gastric pH, such as ketoconazole, antacids, etc. Concomitant administration of famotidine is therefore not indicated unless advised by a physician.
- Special precautions for storage, disposal and other handling: none.

NON-PHARMACOLOGICAL ADVICE

Diet

- Food intake is recommended 3 to 5 times daily, and smaller amounts are preferred. Avoid foods and drinks that reduce the lower oesophageal sphincter resistance, such as chocolate, citrus fruits, fatty and spicy foods, carbonated beverages, black coffee, alcoholic drinks.
- Low-fat diet and mild seasoning is recommended. Avoid very cold and relatively hot foods and beverages; do not drink black coffee – green tea is recommended instead.
- Avoid supine position after eating. The last meal should be consumed at least three hours before bedtime.
- After your meal, chewing gum or a candy may be beneficial for saliva secretion.

Lifestyle

- Although currently there is no overweight, wearing tight clothes and belts may increase the susceptibility to reflux, so they are not recommended.
- Regular running, unfortunately, also may cause deterioration of reflux disease, due to the increase of abdominal pressure. Therefore running should be temporarily discontinued and to be replaced by swimming, fast walking, easy gymnastics for
example. Quitting smoking or at least reducing it to a minimal level is highly recommended.

- To help the patient in quitting smoking the pharmacist can offer nicotine-containing chewing gum for example.
- Lifting the head of the bed by 15-20 cm may reduce the frequency and duration of reflux episodes.

**MONITORING**

The patient should be asked to return to the pharmacy if symptoms worsen or do not relieve while using the drug. The patient should be informed when it is necessary to consult the family physician (see below).

**SEEKING MEDICAL ADVICE**

Patients should be advised that the continuous treatment period allowed is 6 days, and the tablet should not be taken longer without medical supervision. If symptoms are not relieved during this time, consulting with the family physician is required for further tests.

Also contact your doctor immediately if:

- dysphagia (difficulty in swallowing)
- odynophagia (painful swallowing)
- water brush (sudden, reflectoric, large amount of saliva secretion)
- vomiting
- bleeding or anaemia
- involuntary weight loss and/or loss of appetite occur.

**SOURCES**

- The official website of National Institute of Pharmacy and Nutrition
- Medical management of gastroesophageal reflux disease in adults.
- The official website of The electronic Medicines Compendium (eMC)
TOPIC: CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)

MEDICAL HISTORY

Patient
58-year-old male patient, overweight (BMI=28)

Current complaints
The patient claims a prescription for Spiriva inhalation powder in hard capsule, which he started to use a few months ago. He was diagnosed with chronic obstructive pulmonary disease five years ago. He has dyspnoea when doing heavy physical exercise.

Other diseases
Hypertension, hyperlipidaemia, congestive heart failure.

Medications, natural products, dietary/herbal supplements taken
- Regularly:
  - Spiriva 18 microgram inhalation powder in hard capsule, once in the morning
  - simvastatin 20 mg coated tablet, 1 tablet in the evening
  - Norvasc 10 mg tablet (amlodipine), 1 tablet in the evening
  - Coverex-AS 5 mg coated tablet (perindopril), 1 tablet in the morning
  - Nitromint 2,6 mg long-acting tablet (glyceryl trinitrate) 1 tablet twice daily
- Occasionally:
  - Ventolin Evohaler metered dose inhaler (salbutamol) as needed, maximum 2 doses 4 times a day. The patient uses it 2 to 4 times a week.

Lifestyle, profession
The patient lives on a farm near a small town, where he has been farming, but during the last few years he has been unable to do the heavy work, as he is often short of breath. He started to smoke at a young age and used to smoke 1-1.5 boxes of cigarettes a day. For the advice of his doctor he tried to quit smoking, but he had no success. Currently he smokes 10-12 cigarettes a day.

Allergy
No known allergies.

Other relevant information
Last winter he had prolonged respiratory tract infections several times, for which he received antibiotic treatments.

PHARMACEUTICAL INTERVENTIONS

Decision on dispensing medication
The prescribed medication can be dispensed.

Reasons/background
There is no contraindication or interaction which would make it unsafe to use of his medications.
Details of dispensed medication (based on SmPC)

SPIRIVA® 18 microgram inhaled powder in hard capsule (tiotropium bromide monohydrate)

- Dosing schedule for adults: Once daily, preferably at the same time each day. This patient was prescribed to use it in the morning.
- Administration: the capsules are only for inhalation, which should be inhaled by using a HandiHaler inhalation device. The capsules must not be taken orally.
- Onset of action: not relevant
- Expected length of treatment: intended for long term use.
- Possible side effects:
  - Common: dry mouth
  - Uncommon: headache, dizziness, taste disorders, blurred vision, atrial fibrillation, pharyngitis, dysphonia, cough, gastroesophageal reflux disease, urinary retention, dysuria
- Contraindications: no contraindications are relevant for the current patient.
  Generally:
  - Hypersensitivity to the active ingredient or to any of the excipients
- Interaction with other medicinal products and other forms of interaction: no interactions are relevant for the current patient.
  Generally:
  - No drug-drug interaction has been reported for this medication.
- Special warnings and precautions for use:
  - Possible blurred vision or dizziness may influence the ability to drive.
- Special precautions for storage, disposal and other handling: do not store above 25 °C.

How to use the inhalation device

For a successful treatment it is essential that the patient is able to use the inhalation device properly. Therefore when this medication is dispensed to the patient for the first time, detailed instructions should be given to the patient on the use of the inhalation device, and the patient’s knowledge on the use of the inhalation device should be regularly reevaluated.

How to use the HandiHaler device:

1. Open the cover lid while pressing the piercing button. Open the mouthpiece by pulling it upwards.
2. Remove one capsule from the blister package and place it into the center chamber of the device. It does not make any difference which way the capsule is put into the chamber. Close the mouthpiece firmly, but leave the cover lid open.
3. Hold the device with the mouthpiece upwards, completely press the piercing button only once, then release the button. Completely breathe out, paying attention not to breath into the device.
4. Place the device to your mouth and tightly close your lips around the mouthpiece. Breathe in slowly and deeply. Take the device away from your mouth, and try to hold your breath for 10 seconds.

5. Repeat step 4 in order to completely inhale the full content of the capsule.
   Open the mouthpiece and remove the empty capsule from the device. Then close the mouthpiece and the cover lid.

**Further remarks:**
Spiriva inhaled powder in hard capsule is available in two forms: either packed together with the HandiHaler inhalation device or without the device. When dispensing the medication pay attention to which one is prescribed. When it is prescribed to the patient for the first time, it is essential to dispense the package which contains the HandiHaler device. The inhalation device may be used for several months, therefore during repeated prescribing it is not essential to prescribe the package with HandiHaler device every single time.

**NON-PHARMACOLOGICAL ADVICE**

- **Smoking cessation:** in order to slow the progression of chronic obstructive pulmonary disease it would be important that the patient completely stops smoking. Although he had already tried to quit, he did not succeed. It should be discussed with the patient what method(s) he had previously tried, and he should be encouraged to try again, using different methods, and he should aim at completely quitting smoking.

- **Vaccination:** the acute exacerbations of chronic obstructive pulmonary disease is often linked to viral or bacterial respiratory tract infections. This patient experienced repeated respiratory tract infections during the previous winter. To reduce the risk of respiratory tract infections, it is advised to receive flu vaccination every year, and also pneumococcal vaccination can be recommended.

**REFERRING TO THE DOCTOR**

Refer the patient to the doctor if he experiences any unusual symptoms or complaints while taking the medication.

**SOURCES**


TOPIC: ASTHMA

MEDICAL HISTORY

Patient
10-year old, slim female patient

Current complaints
Medications are claimed by the patient’s mother. They have had an appointment with a pulmonoly specialist today, who prescribed Seretide Discus instead of the previously used Flixotide Evohaler. Lately the patient has had to use her reliever medication (Ventolin) 3 to 5 times weekly, and has even had symptoms during the nights several times. Currently the mother is claiming Seretide Discus and Ventolin Eohaler. The patient also has allergic rhinitis; her allergic symptoms usually persist from May to October.

Other diseases
Allergic rhinitis

Medications, natural products, dietary/herbal supplements taken
- Regularly:
  - Seretide Discus 50/100 micrograms/dose inhaled powder
  - Aerius 5 mg coated tablet (she takes it from May to October)
- Occasionally:
  - Ventolin Evohaler metered dose inhaler (salbutamol) used if needed maximum 2 doses 4 times a day.

Lifestyle, profession
Elementary school student. She is partially relieved from participating in the physical education classes at school. Once a week she takes special swimming classes.

Allergy
Grass, ragweed

PHARMACEUTICAL INTERVENTIONS

Dispensing medication
The prescribed medications can be dispensed.

Reason/background
There is no contraindication or interaction, which would make it unsafe to use of his medications.
Details of dispensed medication (based on SmPC)

SERETIDE DISCUS® 50/100 microgram/dose inhalation powder Accuhaler (50 microgram salmeterol, 100 microgram fluticasone propionate)

- Dosing schedule: twice daily, in the morning and evening, one inhalation
- Administration: Previously the patient used a metered dose inhaler. Accuhaler is a new inhalation device for her, which has to be used differently than a metered dose inhaler. Therefore upon dispensing, detailed instructions should be given on the proper use of the accuhaler as follows:
  1. To open the inhaler, hold the outer cover of the accuhaler in one hand while pushing the thumb grip away with your other hand until a click is heard.
  2. Hold the accuhaler with the mouthpiece towards you and slide lever away until it clicks. This makes the dose available for inhalation and moves the dose counter on.
  3. Holding the accuhaler level, breathe out gently away from the device, put the mouthpiece to your lips. Breathe in steadily and deeply through your mouth.
  4. Remove the device from your mouth, and hold your breath for about 10 seconds.
  5. To close the device, slide thumb grip back towards you as far as it will go (until it clicks).
  6. After use, rinse your mouth with water.

- Expected time of onset of action: not relevant
- Expected duration of treatment: long-term treatment
- Possible side effects:
  o Common: thrush in the mouth and throat, hoarseness, throat irritation
- Contraindications: no contraindications are relevant for the current patient
  Generally:
  o Hypersensitivity to the active ingredients or to any of the excipients.
- Interaction with other medicinal products and other forms of interaction: no interactions are relevant for the current patient.
  Generally:
  o CYP 3A inhibitors (eg. ketoconazole, itraconazole) may increase the plasma level of fluticasone and salmeterol resulting in increased effect.
- Special warnings and precautions for use:
  o If symptoms do not improve or even deteriorate during the use of Seretide the doctor should be consulted without discontinuing using the medication.
- Special precautions for storage, disposal and other handling: Do not store above 30 °C
How to use the inhalation device

- For a successful treatment it is essential that the patient is able to use the inhalation device properly. Therefore when the medication is dispensed for the first time the patient (parent) should receive detailed instructions on the proper use of the inhalation device, and the patient’s knowledge on the use of the inhalation device should be regularly reevaluated.

- There is a counter on the accuhaler which indicates the number of remaining doses.

• Further remarks:

- It should be explained to the patient (parent), that Seretide accuhaler is for the maintenance treatment of asthma, therefore it should be continuously used twice daily, even if the child becomes symptom-free.

- It should be emphasized that in case of all inhaled medication containing corticosteroids, it is important that to the patient rinses his/her mouth with water after use to prevent the development of thrush in the mouth and throat.

VENTOLIN EVOHALER® metered dose inhaler (100 micrograms salbutamol)

• Dosing schedule: use when needed to relieve acute bronchospasm, but should not exceed 2 puffs per occasion and maximum 4 times daily. The maximum dose is 8 puffs in a 24-hour period.

Administration: the medication should be taken through inhalation. The inhaler should only be used if needed to relieve an acute asthma attack. It is not intended for the maintenance treatment of asthma.

How to use the metered dose inhaler

1. Stand up.
2. Remove the mouth piece cover and shake the inhaler.
3. Hold the inhaler upright with your thumb on the base, below the mouth piece. Breathe out completely, and tilt your chin up.
4. Put the mouthpiece in your mouth and start taking a breath slowly and deeply. At the start of inspiration, press the canister down, while continuing to inhale deeply.
5. Hold your breath for preferably 10 seconds, or as long as it is comfortable.
6. If you have to take 2 puffs, wait half a minute before taking the second dose.

• Expected onset of action: the broncodilating effect begins within 5 minutes, and lasts for 4 to 6 hours.

• Expected duration of treatment: use only if needed

• Possible side effects:

  - Common: tremor, headache, tachycardia
• Contraindications: no contraindications are relevant for the current patient
  Generally:
  o Hypersensitivity to the active agent or any of the excipients.
• Interaction with other medicinal products and other forms of interaction: no interactions are relevant for the current patient.
  Generally:
  o It should not be used concomitantly with non-selective beta blockers.
• Special warnings and precautions for use:
  o The prescribed maximum daily dose should not be exceeded. If Ventolin Evohaler is necessary to be used too often, it suggests that the patient’s asthma symptoms are not controlled properly. In this case it is recommended to visit your doctor, as your maintenance treatment may require some modification.
  o If Ventolin Evohaler does not relieve the bronchospasm in case of an acute asthma attack the patient requires emergency medical treatment.
• Special precautions for storage, disposal and other handling: Do not store above 30 °C

How to use the inhalation device

  o If the proper use of the metered dose inhaler is difficult for the child, additional use of a spacer should be recommended.
  o Ventolin Evohaler should always be at hand for any case of an unexpected asthma attack.

NON-PHARMACOLOGICAL ADVICE

• The patient’s condition may be improved by trying to avoid and eliminate any known triggers (eg. pollens) from the patient’s surroundings.

MONITORING

Respiratory function of the patient can be easily monitored by measuring peak flow by using a simple peak flow meter. A peak flow meter can be purchased in a pharmacy or in a medical device store. The measured peak flow results should be recorded in a diary.

How to use a peak flow meter:
1. Stand up.
2. Move the pointer to zero.
3. Take a deep breath.
4. Place the peak flow meter in the mouth and hold with without blocking the mouthpiece with your tongue.
5. Blow out air as fast as possible with a short, sharp blast.
6. Repeat a total of three times. Wait at least 15 seconds between measurements.
7. Record the highest reading of the three measurements.

SEEKING MEDICAL ADVICE

If the patient’s symptoms do not improve or even deteriorate while using the new medication the doctor should be consulted. Consultation is also needed in case of experiencing any unusual symptoms or complaints while using the medication. If Ventolin
Evohaler does not relieve the bronchospasm in case of an acute asthma attack, the patient requires emergency medical treatment.

**SOURCES**

- Egészségügyi szakmai irányelv – Az asztma diagnosztikájának, kezelésének és orvosi gondozásának alapelveiről felnőttkorban. [Professional guideline on the diagnosis, treatment and medical care on the principles of asthma in adults] Klinikai egészségügyi szakmai irányelv 000819., 2014
TOPIC: THROMBOSIS PROFILAXIS

MEDICAL HISTORY

Patient
54-year-old woman with normal body weight

Current complaints
After visiting a bath the last weekend the patient complains about urgent urination and asks for a product containing American cranberry

Other diseases
Varicosity

Medications, natural products, dietary/herbal supplements taken
• Regularly: Syncumar Mite 1 mg tablet once a day, Remotiv 3x1 tablets
• Occasionally: BioMed horse-chestnut cream
• What has been done to relieve the complaints? None

Allergies
No known allergies.

Other relevant information
A few months ago she purchased Remotiv for mild depression in another pharmacy. She is under tight medical supervision and her latest INR value was appropriate.

PHARMACIST’S INTERVENTION

Decision on dispensing medication
Instead of an American cranberry product Urzinol coated tablets are dispensed to the patient.

Reason/background
1. American cranberry (Vaccinium macrocarpon) is primarily used for the prevention of newly acquired and recurrent lower urinary tract infections, while common bearberry (Arctostaphylos uva-ursi) is effective in relieving of a minor infection.

2. Consumption of American cranberry may increase bleeding time among patients on vitamin K antagonist (acenocumarol, warfarin) therapy. Presumably this interaction is based on the inhibition of CYP-450 enzymes.

3. Upon consultation the patient tells that she takes Remotiv tablets which contains hypericum. Hypericum is a known inductor of the CYP-3A4 enzyme and it can reduce the effect of acenocumarol which is metabolised by the same enzyme. Using American cranberry, hypericum and the acenocumarol together should require tight medical supervision because of possible unpredictable changes in their therapeutic effect.
Details of dispensed medication (based on SmPC)

URZINOL® coated tablets (common bearberry dried extract)
• Dosing regimen (single dose and maximum daily dose): 3x2 tablets
• Method of administration: after meal
• Onset of action: 2-3 days
• Duration of therapy: until symptoms stop or at least for 4 days, maximum 7 days. No more than 5 treatment courses are allowed per year!
• Contraindications: hypersensitivity, pregnancy, lactation, under the age of 18
• Possible side effects: incidentally hazel discolouring of the urine, rarely nausea, vomiting, stomach ache
• Interaction with other medicinal products and other forms of interaction: Unknown

SYNCUMAR MITE® 1 mg tablets (acenocumarol)
• Dosing regimen (single dose and maximum daily dose): individually, according to the INR value
• Method of administration: the dose should be taken once daily, preferably at the same time each day.
• Onset of action: several days
• Duration of therapy: individual
• Possible side effects: In case of high INR value epistaxis, gum bleeding, gastrointestinal bleeding, haematuria may occur
• Interaction with other medicinal products and other forms of interaction:

Medications increasing the effect of Syncumar:

**Moderately:** allopurinole, bezafibrate, cefalosporins, diclofenac, furosemide, gemfibrozil, omeprazole, quinolons, SSRIs, tricyclic antidepressants, vitamin C

**Extremely:** amiodarone, aspirine, etacrynic acid, indometacine, clofibrate, metronidazole, naproxen, penicillin, piroxicam, sulfonamids, tetracyclines, thyroid hormones, vitamin E
**Medications decreasing the effect of Syncumar:**

**Moderately:** anticoncipients, duloxetine, glutetimide, haloperidole, carbamazepine, metformin, tiazid diuretics, spironolactone, vitamin K

**Extremely:** barbiturats

**Foods and drinks increasing the effect of Syncumar:**

alcohol, tonic, American cranberry

**Foods and drinks decreasing the effect of Syncumar:**

**Moderately:** apple, carrot, green bean, mushroom, orange

**Extremely:** broccoli, cabbage, cauliflower, egg, liver, pepper, raspberry, salad, strawberry, tomato

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**Upon dispensing vitamin K antagonist medications:**

Emphasize the importance of regular INR checking.

Emphasize to check the color of urine and stool regularly. If bleeding occurs see a doctor immediately.

Draw the patient’s attention to dietary restrictions.

Many factors (illnesses, dietary supplements, new medications) can impact the effect of vitamin K antagonists!

Always inform the doctor or pharmacist about taking this type of medicine.

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**NON-PHARMACOLOGICAL ADVICE**

Advise the patient to pay attention to appropriate fluid intake. (1.5 – 2 l/day)

**SEEKING MEDICAL ADVICE**

- Draw the patient’s attention to visit the GP if the symptoms still persist or are getting worse (e.g. fever, haematuria or urogenital spasm occurs) after Urzinol coated tablets having been taken for 4 days.
- If symptoms recur within 14 days the patient should visit the doctor.

**SOURCES**

- http://www.novenyigyogyszer.hu/gyogynoveny/orvosi_medveszolo
TOPIC: VARICOSITY

MEDICAL HISTORY

Patient
66-year-old, moderately obese male patient

Current complaints
The patient claims his prescriptions (Furon 40 mg, Minipress 2 mg) and purchases a magnesium containing medication. He complains of leg cramps which have occurred intermittently for several months. He also feels his legs heavy and his ankles swell by the end of the day.

Other diseases
Essential hypertension
Varicosity

Medications, natural products, dietary/herbal supplements taken
• Regularly:
  Minipress 2 mg; 1 tablet in evening
  Furon 40 mg; 1 tablets in morning, every other day
  Kaldyum; 2x1 capsule daily
  Atorva-Teva 40 mg; 1 tablet at bedtime
  Noacid 40 mg; 1 tablet in the evening
• What has been done to relieve the complaints? Magne-B6 3x2 tablets (for months)

Allergies
No known allergies.

Other relevant information
The patient has been taking magnesium containing medication (Magne-B6) for three months but his symptoms still persist. He didn’t care about the treatment of his varicosity so far. In response to the pharmacist’s question the patient admits that he takes other medication as well.

Pharmacist’s intervention

Decision on dispensing medication
Detralex 500 mg tablets
Elastic bandage

Reason/background
1. Venous backflow and the metabolism of tissues is decreased due to development of varicosity and these changes cause symptoms such as ankle swelling and/or leg cramps. In most of the cases symptoms are not caused by hypomagnesaemia. This explains why taking magnesium for months was unsuccessful; hence Magne-B6 tablets were not dispensed to the patient again.
2. Furosemide is a loop diuretic and alike many diuretics it can cause dehydration and electrolyte imbalance, including loss of potassium which is needed to be supplemented.

3. Compression therapy is a mainstay of conservative treatment of varicose veins which reduces the stagnant blood volume due to compression of superficial veins. In addition, constricting the deep veins and lymphatic vessels increases venous backflow and finally it supports muscle pump function. All of these effects result in a reduction of venous stasis reducing the risk of thrombosis.

4. Pharmacological therapy is another mainstay of the conservative treatment of varicosity. Level A recommendation supports the rational of using micronized flavonoid extract and hydroxylethyl-rutoside.

5. Depending on the severity of varicosity and symptoms oral treatment can be supplemented by local treatment.

It is important to recognize when it is necessary to refer the patient to a doctor!

During the excessive use of furosemide fluid and electrolyte disturbances often occur due to increased fluid and electrolyte secretion, therefore monitoring of serum potassium, calcium and sodium is necessary.

Electrolyte disturbances may develop, therefore it is important to distinguish between the symptoms of venous circulation disorders and the symptoms of electrolyte disturbances.

Details of dispensed medication (based on SmPC)

**DETRALEX® 500 mg coated tablets (micronized flavonoid extract)**

- **Dosing regimen (single dose and maximum daily dose):** 2x1 tablet
- **Method of administration:** To be taken with meals.
- **Onset of action:** weeks
- **Duration of therapy:** at least 6 months
- **Possible side effects:** Often nausea, diarrhea, indigestion occur.
- **Interaction with other medicinal products and other forms of interaction:** Unknown

**NON-PHARMACOLOGICAL ADVICE**

- Explain the appropriate use of elastic bandage, emphasizing the following:
  - apply the bandage in the morning when oedema is not present
  - it should put the highest pressure around the ankle, and pressure should gradually decrease upwards with layers of the bandage partially overlapping
- It is important to do venous leg exercise
- It is recommended to elevate the legs in lying and sitting position
- Sun-bathing and using a sauna should be avoided
- It is recommended to exercise regularly (e.g. walking, riding, swimming).
In pharmacies leaflets are available containing diagrams and other useful information on varicosity. If patients have questions or complaints and turn to the pharmacist we can offer these brochures beside face-to-face counseling.

**SEEKING MEDICAL ADVICE**

- If oedema of the ankles are accompanied by breathlessness, weakness or fatigue.
- If muscle pain suggests the possibility of rhabdomyolysis due to atorvastatin therapy.
- If colour or texture of skin on legs is changed.

**SOURCES**

- Soós, Gyöngyvér: Gyógyszerészi gondozás [Pharmaceutical Care], Magyar Gyógyszerésztudományi Társaság, 2004
TOPIC: TICK-BITE PREVENTION

MEDICAL HISTORY

Patient
This case involves a whole family including the parents in their mid-thirties and their children (9 and 11 years old).

Current complaints
The mother tells the pharmacist that they are planning their first family trip, namely a mountain hike, but they do not have appropriate protection against the insects and tick bites. Therefore she would like to purchase a mosquito and tick repellent. She has heard about tick-borne encephalitis, but none of the family members have been vaccinated against it. They have not used tick removal tools yet.

Other diseases
No other known diseases.

Medications, natural products, dietary/herbal supplements taken
• Regularly: None.
• Occasionally: None.

Lifestyle, profession
Both of the parents have a sedentary job, the father is a bus driver, the mother is an accountant. The children attend elementary school and they regularly do sports (swimming, running). The whole family follows a healthy diet, they consume a lot of fruits and vegetables. The mother says they do not have too much time for doing sports together, therefore this trip seems to be fun. The parents are non-smokers and they do not drink alcohol.

Allergies
No known allergies.

PHARMACIST’S INTERVENTION

Decision on dispensing medication
A repellent (active ingredient: diethyltoluamide) and a tick removal tool (fine-tipped tweezers or tick removal spoon) were dispensed. The patient was given information about the proper use of these products, as well as on how to prevent tick bites. The importance of full-body check was explained, and tick-borne diseases and immunisation against encephalitis were also mentioned.

Reason/background
The patient can choose between various agents (diethyltoluamide, picaridin, ethyl butylacetylaminopropionate) and medication forms (cream, spray, aerosol, roll-on). In this case a highly effective diethyltoluamide spray was chosen, because applying a repellent in spray form is the easiest and quickest way to protect the whole family against insects.
Details of dispensed medication

Repellent spray (VAPE DERM EXTRA® insect repellent spray)

- Method of administration: apply the repellent to the skin and the clothes from a distance of about 10-20 centimeters. Do not apply the product directly into the face but spurt it into one hand and apply to the face carefully. Do not spray around/into the mouth, the eyes or into an open wound. Wash your hands after use. After returning from the outdoors, wash off the treated skin surface. Avoid children using the product alone.
- Onset of action: immediately
- Duration of effect: repeat the application every 4-5 hours (but time interval may differ for different products).
- Special precautions for storage, disposal and other handling: store it protected from light and in a dry place.
- Possible side effects: skin irritation. If skin irritation occurs, the spray should be removed by washing the area with mild soap and water.
- The spray is effective against mosquitoes too.

Tick removal tool (fine tipped tweezers/tick removal spoon)

- How to use it:
  First of all do not irritate the tick and the skin with oil, cream and any other kinds of chemicals!
  Grasp the tick as close to the skin as possible and pull upward steadily but gently.
  Do not squeeze or crush the tick to avoid the contact with the tick’s body fluids which may contain infectious agents.
  Do not worry if the tick’s mouth parts can not be removed completely, it will eject from the skin later (like a splint) and it does not cause infections.
  After removal of the tick, disinfect the wound and let the skin heal.

NON-PHARMACOLOGICAL ADVICE

- It is important to draw the patient's attention to wear a hat, long-sleeved shirts, long pants, and socks in the nature, and bypass bushy and wooded areas or thos with a dense undergrowth to reduce the chance of tick bites.
- Be aware that ticks are active not only in the summer but also in spring and autumn. In addition, ticks prefer mild weather and humid air.
- Preferably tick bite should be noticed as soon as possible. Every time after outdoor activities the patient should check the whole body thoroughly. Special attention should be payed on the legs (behind the knees and shin), the armpits, the waist, as well as children’s heads and around the ears.
- Having been bitten by a tick the patient should observe the affected area and should note the date of the bite. It can be useful if complications occur.
The patient (parents) should be informed about the possible consequences of tick bite, for example tick-borne encephalitis and Lyme disease.

Tick-borne encephalitis is a viral disease. Its first symptoms occur 7–14 days after the tick bite and include fever, headache, discomfort, myalgia, inappetence and nausea. It does not have a specific cure, only intensive care treatment and symptomatic therapy can be applied. Encephalitis can cause severe and permanent neurological defects. Vaccination against tick-borne encephalitis is available.

Lyme disease is a bacterial infection (mainly caused by Borrelia burgdorferi). Treatment includes antibiotics. The importance of Lyme disease is that it may persist for decades with different manifestations (neurological, articular, cardial) if the patient is not treated properly. The most characteristic symptom is erythema around the bite after 1–4 weeks, which grows gradually. Vaccination against Lyme disease is not available.

The patient should be informed that vaccination against tick-borne encephalitis is available. If the patient often goes on outdoor trips, vaccination should be recommended. The patient should be informed about the vaccination schedule. The injections are prescribed and administered by the GP. It would be beneficial if the patient could contact the GP to inquire about immunization.

Tick-borne encephalitis vaccine:
Available in junior (for children) and adult form, and contains whole inactivated virus.
Vaccination schedule:
1st dose: elected date.
2nd dose: 1 to 3 months after the 1st vaccination dose.
3rd dose: 5 to 12 months after the 2nd vaccination dose.
To maintain immunity boosters doses should be given in certain intervals. The first booster dose should be given 3 years after the 3rd dose. Subsequent boosters should be given every 5 years (above 60 years of age the booster intervals are reduced to 3 years).
Method of administration: intramuscular injection into the upper arm.
Possible side effects: injection site reactions, pain, rarely anaphylactic reaction may occur.
Store in a refrigerator (2–8 °C).

seeking medical advice
If the patient experiences skin redness at the affected area, fever and discomfort within several weeks of tick removal, and/or the erythema is growing, seek medical advice.

Sources
• NEFMI szakmai irányelv a Lyme borreliosis klinikai és laboratóriumi diagnosztizálásáról és kezeléséről [Ministry of National Resources; Guideline on the treatment and diagnosis of Lyme borreliosis; Egészségügyi Közlöny. 2011; 61:1386–1392.

• Az Országos Epidemiológiai Központ 2. módszertani levele a kullancsok elleni védekezésről [National Center for Epidemiology: Strategies against tick bites]. Epinfo. 2009; volume 16; special issue 3.

• National Center for Epidemiology; question & answer about ticks; Available at: http://www.oek.hu/oek.web?nid=927&pid=1 [Accessed: May 2015]

TOPIC: SCABIES

MEDICAL HISTORY

Patient
68-year-old, slightly obese (BMI=27) male patient.

Current complaints
The patient has experienced “red spots” and itching (worse at night) between his fingers and in his armpit for a few days. He went to his GP to get prescriptions for his regularly taken medications, and also complained his symptoms. The GP diagnosed scabies and recommended linimentum scabicidum. The doctor instructed the patient to use the whole amount of the preparation and go back for a check-up if the symptoms still exist.

Other diseases
Hypertension

Medications, natural products, dietary/herbal supplements taken
- Regularly: Meramyl HCT 5 mg/25 mg tablets (taken for 10 years)
- Occasionally: None
- What has been done to relieve the complaints? : Nothing

Lifestyle, profession
The patient is retired, lives alone and rarely leaves his home. Sometimes he goes out to the pensioner’s club by tram. Walking and doing exercise are too tiring for him. His daughter often attends him to do the housework. He follows traditional Hungarian cuisine and consumes little amount of fruits and vegetables. He is a non-smoker, but drinks little amounts of alcohol regularly.

Allergies
No known allergies.

PHARMACIST’S INTERVENTION

Decision on dispensing medication
Linimentum scabicidum FoNo VII. was dispensed to the patient.

Details of dispensed medication (based on SmPC)

Linimentum scabicidum FoNo VII. (benzyl-benzoate)
- Shake well before use!
- Method of administration: After a bath the whole body should be rubbed in carefully (except the neck and face) with half of the preparation. After 30 minutes, rubbing should be repeated (without having a bath first) with the other half of the preparation. Twenty-four hours later the patient should have a bath, and the clothes and bed linen should be changed.
- Avoid contact with eyes and mucosus membranes.
• Onset of action: One dose is usually enough to stop the infestation, but if symptoms are not relieved the doctor may order a repeated treatment course.

• Possible side effects: Skin irritation may occur.

• The infestation is transmitted by skin to skin contact; it must be noted that if scabies occurs in a community, everybody should be treated at the same time to avoid spreading.

• Special precautions for storage, disposal and other handling: Store it protected from light and keep in a dry place.

**MERAMYL HCT® 5 mg/25 mg tablets (ramipril/hydrochlorothiazide)**

• See at the hypertension topic.

**NON-PHARMACOLOGICAL ADVICE**

Sarcoptes scabiei (scab mite) is responsible for the symptoms. The patient should be reassured that the mite is species specific so this infestation cannot be acquired from domestic animals (cats, dogs). The mites burrow themselves into the skin and feed on blood. They can not survive for more than a few days without hosts. Scabies transmits from person to person by direct contact. The most endangered populations are the elderly and children who live in crowded places for example in nursing homes, kindergarten etc. To stop the infestation and reinfection in these communities, family members and close contacts should also undergo treatment at the same time.

• The infested patient’s clothes should be washed in hot water and should be ironed afterwards.

• Non-washable clothes/items (e.g. shoes) should be placed in a plastic bag and sealed for a week to certainly kill all of the mites.

• The patient should be informed that scabies does not only affect those who live in poor conditions, but anybody can contact with mites (for example in nursing homes or by using public transportation).

**SEEKING MEDICAL ADVICE**

If the symptoms do not resolve, the patient should go back to his GP to have a repeated treatment prescribed.

If the patient complains about serious itching, the GP can prescribe topical corticosteroid or per os antihistamine to avoid skin scraping.

**SOURCES**


• Formulae Normales VII. Linimentum scabiciidum summary of product characteristics

• National Center for Epidemiology; *Epinfo*. 2014;21(44):533–538.

TOPIC: BEE STING ALLERGY

MEDICAL HISTORY

Patient
9-year-old girl with age-appropriate weight.

Current complaints
The child has been stung by bees several times before, but last time she had severe symptoms and was hospitalized shortly after a bee bite. Later on she was examined by an allergologist and she was diagnosed with bee sting allergy. This is the first time an Anapen auto-injector is dispensed for her. According to the mother they do not know how to use the device and they are still uncertain of the whole problem itself.

Other diseases
No other known diseases.

Medications, natural products, dietary/herbal supplements taken
- Regularly: None
- Occasionally: None

Lifestyle, profession
She is school girl, often does sports and she loves outdoor activities such as biking. She regularly goes for a hike with her family. They follow a healthy diet, including a lot of vegetables and fruits. She does not eat too much sweets.

Allergies
Bee sting allergy. No other known allergies.

PHARMACIST’S INTERVENTION

Decision on dispensing medication
Anapen auto-injector was dispensed.

Details of dispensed medication (based on SmPC)

ANAPEN JUNIOR® 150 microgram/0.3 ml Auto Injector (adrenaline)
- Anapen is an automatic injection device, containing adrenaline, indicated for the emergency treatment of allergic reactions to bee stings (generally to insect stings or bites, foods, drugs or other allergens). It is designed for easy and quick use.
  Both the patient and his/her family should be informed on how to use this device in case of an emergency.
- Dosing regimen (single dose and maximum daily dose): The device contains one dose of adrenaline to relieve allergic symptoms. It should be used immediately after a bee sting when symptoms of anaphylaxis occur.
- If no clinical improvement is seen, a repeated injection may be administered after about 5–15 minutes.
After using the injection always seek medical help immediately.

Method of administration: Intramuscular injection.

**How to use Anapen Auto injector**

For intramuscular administration only. Inject the delivered dose into the thigh through clenching if necessary. Do not inject into the hands and feet.

Remove both the black cap (needle protector) and the grey cap at the other end of the device before use.

Grasp the Anapen and push it to the thigh with the needle end of the device.

Then press the red starter-button to inject adrenaline.

After the administration hold the device firmly in place for 10 seconds, then remove it.

Massage the injection area for 10 seconds.

After injection seek medical help immediately.

It should be noted that the uncovered needle may cause injury therefore put the black safety cap back after use.

The device contains a check window to show whether the solution is clear and discolored. (If the solution is obscured the device should not be used). Also, the auto-injector contains an indicator, which turns red if the device was used before.

- Onset of action: minutes
- Duration of therapy: If there is no improvement or if deterioration occurs after the first administration, the injection should be repeated 5–10 minutes after the first injection (provided that the patient has another auto-injector. In this case avoid pricking the same area of the body and call medical help.
- Possible side effects: Tachycardia, palpitation, tremor, sweating, nausea, respiratory difficulties, dizziness, weakness, nervousness, anxiety, cold extremities may follow the administration.
- Special precautions for storage, disposal and other handling: store in the original packaging and do not store above 25°C.
- Caution: Anapen contains sodium metabisulfite that may cause allergic reactions.
- Shelf life: The expiration period is 21 months (from the date of manufacturing). The patient should be informed about expiration time!

**NON-PHARMACOLOGICAL ADVICE**

- Bee sting allergy and its development should be summarised briefly and clearly to the patient and to her mother as follows: bees inject toxic materials (antigens) under the skin and this is the main reason for the allergic reaction. For the development of an allergic reaction at least two stings are required but not at the same time. Primary exposure (first sting) leads to sensibilisation, when the body produces antibodies against bee venom. Subsequent exposure to the antigen (later stings) may result in allergic reactions.
• Call the patient’s attention to the importance of using Anapen whenever he/she is stung by bees and of calling medical help immediately. After the injection the patient should be calmed and lied down until ambulance arrives. Besides, the sting should be removed from the skin immediately.

• The affected skin area should be treated with cold compress to ease erythema, pain and oedema.

• Emphasise to the patient the importance of avoiding insect bites. Whenever she goes outdoor she should comply with precautions:
  Most importantly the auto-injectors should always be carried with her.
  The patient and any other person who might be in a situation to administer the Anapen should know how to use the device.
  It is important to know that repellents do not work against bees.
  Stay away from the territory of bees and from beehives.
  Avoid touching flowers.
  Wear long-sleeved shirts, long pants and avoid great color/pattern clothes and always wear shoes.
  Avoid strong smelling perfumes.
  Use mosquito nets on the windows of the house.
  Always keep the car’s windows shut.

• Allergen-specific immunotherapy should be mentioned to the patient. He/she should be also informed about the purpose and the duration of this therapy.

Allergen-specific immunotherapy (SIT):
Increasing quantities of the specific allergen(s) are administered subcutaneously in order to develop immunologic tolerance to the allergen(s).
Possible side effects: mild allergic reaction, but in some cases severe allergic reactions may occur such as anaphylaxis.
Duration of therapy: the treatment may lasts for months or years.
The treatment is conducted only in appropriately equipped surgeries and in the presence of an allergologist.

SEEKING MEDICAL ADVICE

• The patient should seek medical help immediately even in case of experiencing the mildest symptoms of systemic allergic reaction.

• If the patient is seriously interested in allergen-specific immunotherapy he/she should be referred to an allergologist.


• Az Országos Epidemiológiai Központ módszertani levele a mérges ízeltlábúak (darazsak, méhek, pókok, hangyák, skorpiók) elleni védekezésről [National Center for Epidemiology: Guidelines on protection against poisinous insects]; Epinfo. 2004; volume 11; special issue 2


TOPIC: HEADACHE – MIGRAINE

MEDICAL HISTORY

Patient
28-year-old female patient with a new prescription from a specialist.

Current complaints
The patient's symptoms began two years ago, paroxysmal headache, initially monthly and then later on a weekly basis. Symptoms include nausea, general weakness and sensitivity to light. The patient visited a headache clinic. The doctor sent the patient for MRI tests and diagnosed her with migraine and prescribed sumatriptan and flunarizine for the first time.

Other diseases
No other known diseases.

Medications, natural products, dietary/herbal supplements taken
- Regularly: Oral contraceptive (Lindynette 75 µg/20 µg) for 5 years.
- Occasionally: Paracetamol, non-steroidal anti-inflammatory drugs (Cataflam, Quarelin, Algoflex) for headache attacks.

Lifestyle, profession
Works for a company as an event organizer, performs office work. According to the patient she does not eat breakfast regularly in the morning but drinks coffee and snack during the day. She eats a meal in the evening. She smokes (1 pack of cigarettes/day) and consumes alcohol occasionally.

Allergies
No known allergies.

PHARMACIST'S INTERVENTION

Decision on dispensing medication
Imigran 50 mg and Sibelium 10 mg were dispensed to the patient.

Details of dispensed medication (based on SmPC)

IMIGRAN® 50 mg tablets (sumatriptan)
- Medication used to relieve migraine attacks
- Dosing regimen: Sumatriptan is to be taken when the first sign of an attack is detected. The recommended dose is 50 mg (but some patients may use 100 mg single dose if needed). If the patient’s condition does not improve after the first dose of sumatriptan the dose must not be repeated! However, if the first dose resolves the symptoms of the initial attack but the symptoms return later then another dose may be taken within the next 24 hours. This must be administered with an interval of at least 2 hours between the two doses. The total dose should not exceed 300 mg in any
24-hour period, and must not be used more than 8 times a month as a specific attack medication because the headache may become chronic.

- **Method of administration:** orally.
- **Onset of action:** Clinical effect develops approx. 30 minutes after administration.
- **Common side effects:** dizziness, drowsiness, transient increases in blood pressure, flushing, dyspnea, myalgia.
- **Contraindications:** no contraindications are relevant for the current patient. Generally: myocardial infarction, ischemic heart disease, angina, cerebrovascular accident (CVA), transient ischemic attack (TIA), or peripheral vascular disease, a history of severe or uncontrolled hypertension, during pregnancy or breast-feeding.
- **Interaction with other medicinal products and other forms of interaction:** no interactions are relevant for the current patient. Generally: it should not be given concurrently with ergotamine and ergotamine derivatives or 5HT1 receptor agonists, monoamine oxidase inhibitors and within two weeks after discontinuation of MAO inhibitor therapy.
- **Special precautions for storage, other handling and disposal:** do not store above 25 °C.

**SIBELIUM® 10 mg tablets (flunarizine)**

- **To prevent migraine.** The medicine may reduce frequency of attacks.
- **Dosing regimen:** 10 mg once daily (1 tablet) in the evening before going to bed.
- **Method of administration:** orally.
- **Duration of therapy:** continuous, long-term therapy.
- **Onset of action:** 1 month.
- **If migraine symptoms do not recur then the patient is considered to respond well to medication and thus the daily dose should not be changed. However a break of two consecutive days is recommended weekly.**
- **If there is no noticeable improvement after two months of taking the medication, further treatment is not justified.**
- **After six months your doctor will recommend cessation of treatment, even if the medication is wholly successful.**
- **Possible side effects:** Weight gain (very common); rhinitis, increased appetite, depression, insomnia, somnolence, constipation, nausea, muscle pain, dyskinesia, tremor, irregular menstruation, breast pain, fatigue (common).
- **Contraindications:** no contraindications are relevant for the current patient. Generally: depression, Parkinson's disease or other (extrapyramidal) movement disorders, pregnancy, lactation.
- **Interaction with other medicinal products and other forms of interaction:** in combination with contraceptives it may induce lactation. In general: it increases the effect of sedatives and tranquilizers significantly. Alcohol should be avoided while taking this medication.
- **Special precautions for storage, disposal and other handling:** do not store above 25 °C.
• Side effects of both of the above products (IMIGRAN® 50 mg tablets, SIBELIUM® 10 mg tablets) include drowsiness and fatigue which may adversely affect the ability to concentrate and increase reaction times, so the operation of vehicles or machinery is potentially hazardous.

NON-PHARMACOLOGICAL ADVICE

Avoid factors provoking an attack
Many migraine patients observe various causative factors of migraine attacks. These include environmental and other stimuli such as stress, certain drugs and foods. These factors affect individuals differently, so it is advisable to individually recognise the specific provoking factors and avoid those negative stimuli. It is also advisable to stop smoking, adhere to moderate caffeine and alcohol consumption and eat regular meals.

Possible provoking factors of migraine attacks:
- environmental factors: stress, fatigue, lack of sleep, oversleeping (weekend migraine), weather fronts
- hormonal effects (oral contraceptives, menstrual cycle)
- drugs (nitro-vasodilators, medications that increase serotonin levels)
- food (tyramine, monosodium glutamate, phenylethylamine)
- alcohol, caffeine

Migraine onset
About half of the patients experience a stage of prodroma. This can manifest 12–24 hours before the headache and the patient perceives changes in physical and mental status. A quarter of patients experience an onset of neurological symptoms associated with the assault phase of an aura which can occur approximately 1 hour before the full onset of the migraine. In this case the patient can be ready for the migraine attack. Once the headache has developed, the following are recommended: bed rest (preferably sleep), avoidance of bright light, avoidance of physical activity and noisy environments as these can intensify the pain.

MONITORING, SEEKING MEDICAL ADVICE
Patients who are prescribed flunarizine should be monitored at regular intervals to ensure the early detection of the possible occurrence of extrapyramidal or depressive symptoms. In these cases treatment should be discontinued. Patients should be made aware that the prophylactic therapy should be continued even if migraine attacks continue during the early stages of the treatment. However, if no changes are experienced after two months, the doctor will stop the treatment. Observations of sumatripan and other specific migraine medications suggest that there is a loss of effectiveness with long-term use. The recommended prescribed dose must not be exceeded (see Dosage regimen). If the specific drug is ineffective you must consult your doctor, alternatively take paracetamol or non-steroidal analgesics.
Contraception
Patients should be made aware that the co-administration of hormonal contraceptives and the migraine treatment Sibelium causes prolactin elevations and thus milk secretion may occur. In this case consult your doctor.

Migraine therapy during pregnancy/lactation
There is a decrease in the intensity of migraine attacks during pregnancy. Since there are not enough data to establish teratogenic effects of anti-migraine drugs they should be avoided. During pregnancy, the primary pharmacological treatment should be the use of simple analgesics, i.e. paracetamol.

SOURCES
- www.ihs-headache.org
- www.fejfajas-tarsasag.hu
- www.ogyei.gov.hu
- www.pharmindex-online.hu
TOPIC: TENSION-TYPE HEADACHE

MEDICAL HISTORY

Patient
45-year-old man, slightly overweight (BMI=29).

Current complaints
The patient arrives with a repeat prescription for antihypertensive medication. He also asks for a painkiller for headache. His headache occurs on a weekly basis and he reports the following symptoms: bilateral pain with a band-like distribution and pain being described as a dull heaviness and pressure. The patient says that he is sensitive to weather fronts.

Other diseases
Hypertension

Medications, other supplements taken
- Regularly: Valsotens 80 mg (valsartan) for 2 years.
- Occasionally: Paracetamol, non-steroidal anti-inflammatory drugs (Advil Ultra, Nurofen, Aspirin) for headache; vitamins (Actival Max, vitamin C).

Lifestyle, profession
The patient works as a financial analyst, and is seated all day. According to him the work is very stressful but since he was diagnosed with high blood pressure he has payed more attention to his health condition: he does sport several times a week and eats a healthy diet, he lost 8 kg last year. He doesn’t smoke, consumes alcohol occasionally and drinks two coffees a day.

Allergies
No known allergies.

Other relevant information
Wears glasses and has regular ophthalmic examinations.

PHARMACIST'S INTERVENTION

Decision on dispensing medication
Valsotens 80 mg and Panadol Rapid 500 mg tablets were dispensed to the patient.

Reason/background
The antihypertensive effects of angiotensin II antagonists may be weakened when taken concomitantly with NSAIDs. In addition, concomitant administration of angiotensin II antagonists and NSAIDs increases the risk of decreased renal function and elevated potassium serum levels may occur. For this reason, and in accordance with medical guidelines the pharmacist recommended a paracetamol-containing product.
Details of dispensed medication (based on SmPC)

VALSOTENS® 80 mg tablets (valsartan)
- Angiotensin II receptor blocker type antihypertensive drug.
- Dosing regimen: 80 mg (one tablet) daily in the morning.
- Method of administration: orally
- Onset of action: Not relevant as the medicine is taken continuously. In general, the antihypertensive effect is expected to occur within two weeks, and the maximum effect is achieved within 4 weeks.
- Common side effects: dizziness, orthostatic hypotension.
- Contraindications: no contraindications are relevant for the current patient.
  Generally: severe hepatic impairment, biliary cirrhosis and cholestasis, in the second and third trimesters of pregnancy.
- Interaction with other medicinal products and other forms of interaction: no interactions are relevant for the current patient.
  Generally: Lithium, potassium-sparing diuretics or other medicinal products that increase potassium levels, non-steroidal anti-inflammatory drugs.
- Special precautions for storage, and other handling disposal: do not store above 25 °C.

PANADOL RAPID® (paracetamol 500 mg)
- Dosing regimen: at the occurrence of pain 500–1000 mg (1–2 tablets), minimum dosing intervals of 4 hours, maximum daily dose is 4 grams (8 tablets). The dosage regimen above applies for an adult of 65 kg or above.
- Method of administration: orally
- Duration of therapy: acute therapy
- Onset of action: the analgesic effect occurs within 30 minutes.
- Undesirable effects: no significant common side effect.
- Overdose: paracetamol overdose requires immediate medical attention even in the absence of symptoms because the overdose of paracetamol can cause liver damage.
- Contraindications: no contraindications are relevant for the current patient.

The following must be clarified in every case of dispensing a non-steroidal anti-inflammatory drug:
- Age of the patient
- Whether the patient has any of the following problems:
  - GI ulcer (ulcerogenic effect of NSAIDs: indomethacin > naproxen > diclofenac > ibuprofen)
  - renal failure ↓renal function, ↓fluid secretion (nephrotoxicity)
  - heart failure fluid retention
  - hypertension ↓antihypertensive control (ACE-inhibitors, ARBs, β-blockers, diuretics)
  - asthma ↑bronchial spasm
- Pregnancy? →paracetamol is the first choice
- Has the patient used NSAIDs previously? What? How often? (avoidance of analgetic abuse)
Generally: in patients of under 6 years of age, glucose-6-phosphate dehydrogenase deficiency (hemolytic anemia). Excessive or chronic alcohol intake, hepatic disease (increased risk of paracetamol related liver damage)

- Interaction with other medicinal products and other forms of interaction: no interactions are relevant for the current patient.

Generally: The anticoagulant effect of coumarins may increase with daily administration of paracetamol over the long-term which increases the risk of bleeding (but occasional paracetamol dosing does not have any such effect).

- Special precautions for storage, and other handling disposal: do not store above 25 °C.

**NON-PHARMACOLOGICAL ADVICE**

**Lifestyle**

Encourage the patient to maintain a healthy diet and continue regular exercise. Stress the importance of adequate fluid intake. For the onset of a headache muscle relaxation techniques can be recommended.

**MONITORING**

Blood pressure should be monitored regularly and measurements should be recorded. Testing for other metabolic diseases (e.g. blood sugar and cholesterol levels) should be carried out annually. These measurements can be done at the pharmacy and this service can be offered to the patient if required. The patient must be made aware that the prescribed dose of the analgesic must not be exceeded and the dose should not be taken more than two days a week chronically as analgesic abuse itself may also induce chronic headaches.

**Analgesic abuse**

According to the diagnostic criteria headache caused by analgesic abuse occurs at least 15 days per month. Because of the pain the patient takes analgesics regularly for long term (at least 3 months). Regularly means at least 15 days per month in case of simple analgesics while in the case of combined analgesics, opioids, ergotamine and triptans it means at least 10 days per month. A headache can start or become worse as a result of analgesic abuse.

Regarding the clinical experience the pain can show migraine-like and tension type headache characteristics and the symptomatic picture can be varied within a day.

As can be seen from the criteria, the drug use frequency is an important factor in the onset of daily headache. If the same amount of drug is evenly distributed over the course of the month then it is more likely to cause persistent headaches, while headache is less likely if strong but intermittent doses are used more rarely.

Improvement can be expected from beginning a complex treatment parallel to terminating analgesic abuse. There are no standardized protocols for the treatment of headaches associated with analgesic abuse. The goal of the treatment is to reduce the frequency of headaches, and reduce the use (abuse) of analgesics.
**SEEKING MEDICAL ADVICE**

The patient must visit a doctor if there is no improvement in headache despite the treatment, or if the occurrence of headache continues regularly over a long term, or if the pain shows an increasing tendency.

**SOURCES**

- www.pharmindex-online.hu
- www.ihs-headache.org
- www.fejfajas-tarsasag.hu
- www.ogyei.gov.hu
TOPIC: SUPERFICIAL FUNGAL INFECTION

MEDICAL HISTORY

Patient
Middle-aged, obese woman (BMI=31)

Current complaints
Her skin symptoms started 2-3 weeks before. She observed linear red rash with fine scaling under the breasts and in the abdominal fold, it is itchy and burning. The symptomatic surface area (the rash) is growing slowly.

Other diseases
She has type 2 diabetes mellitus for 5 years, her GP prescribed oral antidiabetic treatment. Her adherence to diet is poor, the physical activities are neglected by her. Her blood pressure is slightly elevated, but she has not used any antihypertensive medicine until now.

Medications, natural products, dietary/herbal supplements taken
• Regularly: Meforal tablet (metformin) 850 mg, 2 x 1 daily
  Diaprel MR (gliclazid) 30 mg, 1 x 1 in the morning
• As needed: Advil Ultra capsule (200 mg ibuprofen)
  Frontin tablet 0.25 mg (alprazolam)

Lifestyle, profession
She is non-smoker, drinks alcohol only occasionally, works as a civil servant.

Allergy
Xilocaine hypersensitivity (recognised during a dental intervention). Food and pollen allergic reactions have never occurred.

PHARMACISTS’ INTERVENTION

Decision on dispensing medication
Candibene Teva cream and lotion (spray) are dispensed to the patient.

Reason/background
Supposed illness: cutaneous candidiasis (syn.: superficial fungal infection or infected dermatitis) caused by the common yeast species Candida albicans. Type 2 diabetes mellitus, obesity and her sweaty skin could be risk factors.
Details of dispensed medication (based on SmPC)

**CANDIBENE TEVA® (clotrimazol 1%) spray (in the morning), and CANDIBENE TEVA (clotrimazol 1%) cream (overnight)**

Gently massage a sufficient amount of cream into the affected skin and surrounding skin areas after the evening bath (make sure that all areas of your skin are well dried). Use gauze dressing for isolation of touching skin areas.

In the morning apply the spray to the affected areas. The slight drying effect of the lotion may be favorable during the daily activities. The spray should be applied from a distance of about 20-30 cm from the affected area.

**Precautions**

The alcohol content of the lotion can cause irritation due to its drying effect. If it happens, change lotion to cream also for daily application.

Due to its isopropil alcohol content the spray is flammable, therefore it should not be used near naked flame.

**NON–PHARMACOLOGICAL ADVICE**

It would be essential to try to improve blood sugar control by adhering to an antidiabetic diet.

Reduction of skin surface moistness by avoiding humid rooms and synthetic clothes is suggested.

Use of antiseptic washing cosmetics and careful drying of the skin after bath are advised. Furthermore, regular use of antifungal body powder could be useful for prevention.

**MONITORING, REFERRAL**

Clinical improvement with relief of pruritus usually occurs within the first week of treatment with Clotrimazole cream. If the patient shows no clinical improvement after two weeks of treatment, a dermatologist should identify the causative infective microbe(s) and may initiate systemic antifungal treatment based on microbiology test results.

**SOURCE**

TOPIC: ACNE VULGARIS

MEDICAL HISTORY

Patient
Young adult man with normal BMI.

Current complaints
He started Roaccutan capsule administration 3 weeks ago because his acne worsened despite of topical treatment. His facial skin became very dry and delicate – redness, inflammation and slight scaling are visible beside the acne pimples, lips are cracked and bleeding.
He asks products for his face and lip problems.

Other diseases
GERD (gastro-esophagial reflux disease)

Medications, natural products, dietary/herbal supplements taken
- Regularly: Roaccutane 20 mg soft capsules (20 mg isotretinoin) twice daily
- As needed: Rennie (calcium carbonate, magnesium carbonate) chewable tablet
  Quamatel Mini tablet (10 mg famotidin) for 1-2 weeks, repeatedly

Isotretinoin (syn.: 13-cis retinoic acid) is indicated for oral administration in a dosage of 0.5-1 mg/body weight kg for the treatment of moderate and severe forms of acne (including conglobata, nodulocystica, or other types having a risk of causing permanent scarring). The recommended cumulative doses are 120–150 mg/body weight kg, which are used for 16-24 weeks. Majority of the patients respond well to the 6-8 monthly courses, but, if the clinical effect is less favourable and thus the disease requires further treatment the regimen can be repeated with the same dosage schedule.

Lifestyle, profession
He is a sales representative; if he has time he visits a body building club. He drinks non-alcoholic energy juices.

Allergies
No known allergies.

PHARMACISTS’ INTERVENTION

Decision on dispensing medication
- To alleviate dryness and peeling of the face:
  Unguentum emolliens FoNo VII.
  Unguentum oleosum 65%
  Aqua destillata 30%
  Oleylum oleinicum 5%
• For chapped and inflamed lip - cheilitis treatment - at night:
  Unguentum ad vulnera FoNo -
  Acidum salicylicum 2%
  Vaselinum acidi borici 98%
• For daily, continuous application, as prevention : oily lipstick (PRIMUS® lipstick)

**Reason/background**

• Skin and mucous membrane dryness and epidermal fragility are common adverse
effect of isotretinoin therapy, resulting from the basic pharmacological effect of this
active substance, namely reduction of the epidermal lipid level. These acute adverse
reactions strongly depend on the daily dose, therefore when the dose is tapered down,
the severity of adverse reactions are reduced. Regular use of emollient creams is really
helpful.

• Unguentum emolliens prepared at the pharmacy contains natural lipids in a form of a
w/o emulsion. The product is an excellent skin softener and very well tolerated even
by sensitive patients. Its use is supportes by long-term clinical experiences.

• At the initiation of isotretinoin therapy, especially when higher doses are used, a more
serious form of cheilitis (lip inflammation) can develop, sometimes with bleeding
cracks causing pain and affecting quality of life. Similarly to face drynesscomplaints can
be decreased with tapering isotretinoin dose (following the therapeutic
recommendations) and improving the patient’s tolerance.

• For treatment of creaking (missing of the epidermis) “Unguentum ad vulnera, FoNo
VII”, a simple wound-healing ointment or another OTC topical products (e.g.
Neogranormon ointment, Curiosa gel) can be recommended to promote skin healing.
To reduce dryness and thus prevent creaking continuous use of a lipstick is advisable.
Some of the lipsticks contain natural, herbal antiphlogistic and antiseptic agents beside
the main oily components.

• „Primus lipstick Chamomile“: It is indicated for Avoiding the dryness of the lips and
against the inflammation and creaking of lips. Its components are skin-friendly: bee
wax, croton and jojoba oils, Vitamin E. It may be very well used for care of lips during
dry, windy or cold weather conditions. The chamomile extract component has an
antiseptic effect and reduces lip-dermatitis.

**Drug information to the patient**

It is very important to inform the patient on any possible side effects of his currently
taken medications and make him aware the he needs to pay special attention to any
undesired effects occuring during the treatment.

**ROACCUTAN® 20 mg soft capsule (20 mg isotretinoin)**

The permanent improvement or rebound appeareance of symptoms depends on the
cumulative dose rather than the daily dose or the length of therapy. It is proven that
cumulative doses above 120-150 mg per body weight (kg) result in no better outcome, so
the recommended doses are maximized. The duration of treatment is individual and
depends on the daily dose; 16 to 24 weeks of therapy is usually sufficient, the effect is
clinically acceptable.
Monthly clinical lab monitoring is needed to recognize any possible metabolic disorders (liver function or hematologic deteriorations, lipid disorders) as soon as possible.

**RENNIE® chewable tablet**
Rennie chewable tablet contains: 680 mg calcium carbonate (equals to 272 mg calcium) and 80 mg magnesium carbonate.
Rennie chewable tablet significantly increases food calcium intake. The maximum recommended daily calcium carbonate intake is 8 grams corresponding to 11 Rennie chewable tablets. That means that the maximum daily dose should not exceed 11 tablets. Long-term administration should be avoided.

**NON-MEDICAL ADVICE**

- Safe contraception must be used during isotretinoin therapy and also at least for 1 month after termination of the treatment.
- Keep off the sunshine and UV light exposition during isotretinoin therapy. High-factor sunscreen use (with a sun protection factor [SPF] of at least 15) is recommended!
- Energy drinks highly irritate the stomach by increasing acid secretion, therefore they may provoke GERD symptoms and thus should be avoided.
- Acne lesions could be worsened by GERD!

**MONITORING, REFERRAL**
Regular dermatologist control is obligatory!

**SOURCES**

- Kárpáti, Sarolta: Bőrgyógyászat és Venerológia [Dermatology and Venerology], Medicina, Budapest 2013.
TOPIC: OSTEOPOROSIS

MEDICAL HISTORY

Patient
68-year-old, slim female patient (BMI=17.5).

Current complaints
The patient has no complaints. Her doctor prescribed her a new medicine (Fortimax tablets; IDC: M81 Osteoporosis without current pathological fracture) which she claims in the pharmacy. She wonders whether she has to continue the vitamin D and calcium supplementation ordered previously by the GP. She worries about falls and fractures, because of her delicate build.

Other diseases
Hypertension and hyperlipidaemia

Medications, natural products, dietary/herbal supplements taken
• Regularly:
  o Citrokalcium 200 mg tablets (calcium, for 2 years), 3x1 tablet daily
  o Vitamin D3 Fresenius 1000 NE tablet (vitamin D, for 2 years), 2 x 1 tablet daily;
  o Atorva-Teva 20 mg filmtablet (atorvastatin, for 5 years) one tablet in the evening;
  o Accuzide 10 mg/12.5 mg filmtabets (quinapril and hydrochlorothiazide), 1 tablet in the morning
• Occasionally: Panadol Rapid 500 mg tablets (paracetamol) for headache, once or twice per month.

Lifestyle, profession
She is a pensioner who used to teach physics and mathematics for 30 years. She has a sedentary lifestyle, rarely leaves her home, she likes reading. She follows traditional diet, she does not like dairy products except cheese and yogurt. She drinks alcohol very rarely (4-5 times a year), she is a non-smoker and drinks coffee once a day in the morning.

Allergies
No known allergies.

Other relevant information:
The patient has received calcium and vitamin D supplementation in recent years in order to prevent osteoporosis. Last month the bone density examination proved osteoporosis (T score=–2.9), so the specialist prescribed Fortimax tablets. She has not suffered an osteoporotic fracture yet, but her mother did at the age of 70 (femur neck fracture) and was unable to walk afterwards.
PHARMACIST’S INTERVENTION

Decision on dispensing medication
One package of Fortimax tablet (4x) was dispensed.

Reason/background:
There was no contraindication to dispense medication.

Details of dispensed medication (based on SmPC)

FORTIMAX® tablets (alendronic acid 70 mg)
• Dosing regimen: one tablet per week (always on the same day)
• Method of administration: To permit adequate absorption Fortimax tablets must be taken at least 30 minutes before the first food, beverage or medicinal product of the day with a glass of non-sparkling water (at least with 200 ml). Fortimax tablets should be swallow whole. The tablet should not be sucked, chewed or allowed to dissolve in the mouth, because this can result in oropharyngeal ulcers. Patients should not lie down until after breakfast which should be at least 30 minutes after taking the tablet. Also the patient must wait at least 30 minutes after taking Fortimax tablet before any other morning medicines (in this case e.g. Accuzide, Citrokalcium, vitamin D tablets) are taken.
• Duration of therapy: not specified
• Possible side effects:
  o Very common: diarrhea, musculoskeletal pain (bone, muscle or joint)
  o Common: headache, dizziness, abdominal pain, dyspepsia, constipation, diarrhea, flatulence, abdominal distension, acid regurgitation.
  o Rare or very rare but serious: osteonecrosis of the jaw after long-term treatment
• Contraindications: no contraindications are relevant for the current patient.
  Generally:
  o Abnormalities of the oesophagus and other factors which delay oesophageal emptying such as stricture or achalasia.
  o Inability to stand or sit upright for at least 30 minutes.
  o Hypersensitivity to the active substance or to any of the excipients.
  o Hypocalcaemia.
• Interaction with other medicinal products and other forms of interaction: no interactions are relevant for the current patient.
  Generally:
  Due to the low (~ 0.6%) bioavailability of oral alendronate, food and beverages (including mineral water), and other orally administrated medications (e.g. Calcium supplements, antacids, etc.) consumed parallel with the tablet will further reduce the absorption of alendronate. Therefore it is recommended to wait at least 30 minutes after taking alendronate before taking any other medicines or meals.
• Special warnings and precautions for use:
Alendronate can cause local irritation of the mucous membrane of the upper gastrointestinal tract.

Osteonecrosis of the jaw (ONJ: osteonecrosis of the jaw, BON: bisphosphonates-associated osteonecrosis) have been reported in patients with osteoporosis after taking oral bisphosphonates (it was more frequent with parenteral administration, and with higher doses). A dental examination with appropriate preventive dentistry should be considered prior to treatment with oral bisphosphonates in patients with poor dental status. During bisphosphonate treatment, all patients should be encouraged to maintain good oral hygiene, receive routine dental check-ups, and report any oral symptoms such as dental mobility, pain, or swelling.

Atypical subtrochanteric and diaphyseal femoral fractures have been reported with bisphosphonate therapy, primarily in patients receiving long-term treatment for osteoporosis. Therefore treated patients should be advised to report any thigh, hip or groin pain and any patient presenting with such symptoms should be evaluated for an incomplete femur fracture.

Patients should be instructed that if they miss a dose of Fortimax tablets, they should take one tablet in the morning after they remember. They should not take two tablets on the same day but should return to taking one tablet once a week, as originally scheduled on their chosen day.

The tablet contains lactose (142.64 mg / tablet)

- Special precautions for storage, disposal and other handling: store below 25°C

### NON-PHARMACOLOGICAL ADVICE

| Recommended calcium intake   | 19–65 years | 1000 mg/day |
| 19–65 years                  | 1000 mg/day |
| > 65 years                   | 1000 mg/day |

| Recommended vitamin D intake: (1 μg = 40 IU; 1 IU = 0.025 μg vitamin D3) |
| 15–65 years                  | 5 μg/day (200 IU/day) |
| > 65 years                   | 10–25 μg/day (400–1000 IU/day) |

**Nutrition, calcium and vitamin D supplementation**

It is recommended to continue taking Citrocalcium and vitamin D tablet as prescribed by the GP. Keeping a diet rich in calcium- and vitamin D is recommended on long-term. Books that contains diet tips, recipes and also nutrition tables can be recommended (e.g.: Rigó, János; Gaálné Labáth, Katalin; Bencsik, Klára: A csontritkulás diétás kezelése [Dietary management of osteoporosis]. Medicina, 2008).

**Calcium supplementation**

Some of the preferred dairy products of the patient (i.e. cheese, see table) have high Ca content (e.g. Edami cheese). Regular consumption of these (on a daily/weekly basis) is recommended. The calcium content of processed cheese (e.g. Maci cheese) is negligible.
Calcium content of well known cheeses

<table>
<thead>
<tr>
<th>Cheese</th>
<th>Ca content (mg/100 g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parmesan</td>
<td>850</td>
</tr>
<tr>
<td>Edami</td>
<td>800</td>
</tr>
<tr>
<td>Ementáli</td>
<td>800</td>
</tr>
<tr>
<td>Pannónia</td>
<td>800</td>
</tr>
<tr>
<td>Anikó</td>
<td>600</td>
</tr>
<tr>
<td>Óvári</td>
<td>600</td>
</tr>
<tr>
<td>Trappista</td>
<td>600</td>
</tr>
<tr>
<td>Sheep’s milk cheese</td>
<td>500</td>
</tr>
<tr>
<td>Hóvirágl</td>
<td>460</td>
</tr>
<tr>
<td>Göcseji</td>
<td>400</td>
</tr>
<tr>
<td>Cream cheese</td>
<td>180</td>
</tr>
</tbody>
</table>

Source: Rigó, János; Gaálné Labáth, Katalin; Bencsik, Klára: A csontritkulás diétás kezelése [Dietary management of osteoporosis] Medicina, 2008)

**Vitamin D supplementation**

Few foods contain a notable amount of vitamin D. Such foods include cod liver oil, liver of oily fishes, margarine fortified with vitamin D, egg yolk (~ 20NE/egg). As these foods are generally not dominant in the meals, artificial supplementation of vitamin D (vitamin D tablets/drops) is recommended.

**Lifestyle**

Physical activity is beneficial for maintaining bone volume and bone structure. In addition, by improving coordination it reduces the risk of falls and fractures. Regular non-exhaustive sports like walking or swimming is recommended (at least 3 times a week for 0.5-1 hour). Joining a physiotherapy group can be also beneficial for the patient.

Accessibility of the patient’s living environmental is recommended:
- Keep electrical cords, telephone lines, etc. out of walkways to reduce the risk of tripping
- Eliminate slippery surfaces (e.g. in bathrooms) by rubber mat. Install handrails.

Fracture prevention:
- Hip protector pants (e.g. Safehip) can be recommended if the patient accepts wearing them. These have proven to reduce hip fracture risk from falls and can be prescribed with reimbursement.
- Avoid sudden lifting of heavy objects (> 2 kg)
SEEKING MEDICAL ADVICE

If patient observes any side effects of medicines, or in cases described above.

SOURCES

TOPIC: ARTHRITIS URICA

MEDICAL HISTORY

Patient
55 year old male patient, overweight (BMI=34).

Current complaints
A patient with gout claims the following prescription: Colchicum- DISPERT coated tablets. (ICD: M10.9 Gout unspecified). Instructions: Take 2 tablets first, then 1-2 tablets every 1-2 hours until the pain reduces (maximum 16 tablets per day).

Other diseases
Hypertension, gastro-oesophageal reflux disease

Medications, other supplements taken
• Regularly:
  o Renitec 10 mg tablet (enalapril, for one year); one tablet in the morning
  o Rabyprex 20 mg gastric acid resistant tablet (rabeprazol, for 3 years); one tablet in the evening
  o Aspirin Protect 100 mg gastric acid resistant tablet (acetylsalicilyc acid, for 2 months, without prescription)
• Occasionally: Saridon (paracetamol, propiofenazon, coffein) for headache (e.g. in case of warm fronts)
• What has been done to relieve the complaints? Cold water compress on the feet during night, but the symptoms did not decrease.

Lifestyle, profession
He is a tram driver, he does not do any sports. He is a smoker (5-15 cigarettes/day), he regularly drinks beer (1-2 bottles) while watching TV in the evening. He does not keep any special diet, but says his wife follows low fat cooking techniques.

Allergies
No known allergies.

Other relevant information
He had already had a gout attack before (about 2 years ago), and he was put on allopurinol (Milurit) afterwards. As the joint pain disappeared after a few months, he arbitrarily stopped allopurinol treatment. Ha had laboratory control one year ago (included in workplace aptitude test), serum uric acid levels were at the upper limit of normal(serum uric acid: 410 µmol/L), other laboratory findings were negative/within recommended ranges.

Serum uric acid normal values: (1 mg/dl = 59.48 µmol/l)
male: 220-420 µmol/l (~3.5 mg/dl – 7 mg/dl)
female: 140–340 µmol/l (~2 mg/dl – 5.5 mg/dl)
Recently he has participated several traditional pig slaughters with his relatives, where he has consumed larger amounts of meat (and pluck too) and has drunk alcohol (e.g. palinka). His father also had gout.

Taking low-dose aspirin (Aspirin Protect) was recommended by his lay wife based on a TV advertisement and his GP is not aware of it.

His blood pressure is measured regularly by his wife. She records the readings in a blood pressure diary; the measurements have always been below 140/90 mmHg for months.

**PHARMACIST’S INTERVENTION**

**Decision on dispensing medication**
The prescribed Colchicum-DISPERT coated tablets were dispensed without any other OTC medicines.

**Reason/background:**
There was no contraindication to dispense medication.

**Details of dispensed medication (based on SmPC)**

**COLCHICUM-DISPERT® coated tablets (colchicine 0.5 mg)**

- **Dosing regimen:** 1 mg initially (2 tablets), followed by 500–1000 micrograms (1–2 tablets) every one to two hours until relief of pain is obtained or vomiting or diarrhoea occurs. A total dose of 8 mg (16 tablets) should not be exceeded. The course should not be repeated within three days.
- **Method of administration:** Coated tablets should be swallowed whole, with adequate amount of liquid (1-2 dl).
- **Onset of action:** 1-2 hours
- **Duration of therapy:** maximum 1 day
- **Possible side effects:**
  - very common: nausea, diarrhea, abdominal pain
- **Contraindications:** no contraindications are relevant for the current patient.

Generally: patients with severe renal impairment (creatinine clearance less than 10 ml/min), patients with renal or hepatic impairment who are taking a P-glycoprotein inhibitor or a strong CYP3A4 inhibitor, pregnancy, lactation, colchicine hypersensitivity

- **Interaction with other medicinal products and other forms of interaction:** no interactions are relevant for the current patient.

Generally:
- HMG-CoA-reductase inhibitors (statins): Acute myopathy has been reported in patients given colchicine with statins. Avoid concomitant use. If necessary, patients should be advised to report muscle pain or weakness.
- P-glycoprotein inhibitors and strong CYP3A4 inhibitors: Colchicine is contraindicated in patients with renal or hepatic impairment who are taking a P-glycoprotein inhibitor (e.g. ciclosporin, verapamil or quinidine) or a strong CYP3A4 inhibitor (e.g. ritonavir, atazanavir, indinavir, clarithromycin, telithromycin, itraconazole, ketoconazole, or a large amount (~1000 ml) of grapefruit juice) as
colchicine serum concentrations can be severely augmented resulting in colchicine poisoning.

- Special warnings and precautions for use:
  - Patients should be aware of the first symptoms of colchicine poisoning. The first symptoms that occur after a latent period of 2-12 hours are feeling of burning and rawness in the mouth and throat, difficulty in swallowing, hemorrhagic gastroenteritis and abdominal pain. Upon recognising these symptoms the patient needs immediate medical care.
  - Contains 43.9 mg lactose per tablet.

- Special precautions for storage, disposal and other handling: Store below 25°C.

NON-PHARMACOLOGICAL ADVICE

General information
Patients should be informed that gout requires regular medical control (serum uric acid measurements) and urate lowering therapy even after the acute gout attack resolves. Previously the patient arbitrarily stopped urate lowering therapy (a few months after his first gout attack).

Over-the-counter medications
The patient has been taking low-dose aspirin (Aspirin Protect) for two months without consulting his GP. Low-dose aspirin is proven to increase serum uric acid levels by inhibition of renal secretion of uric acid. As there is no myocardial infarction, acute transient ischemic attack (TIA) or cerebral infarction in the anamnesis, but he has hyperuricemia, suspension of the low-dose aspirin therapy and GP consultation is recommended.

Diet
Low-purine diet is recommended.
- Low purine containing foods (0–30 mg purine / 100 g) for example: milk, yogurt, cheese, sour cream, cottage cheese, butter, oil, margarine, honey, sugar, rice, flour, cereals, pasta, bread, potatoe, all fruits, egg, juice, jam, nuts, coconut, pistachio, almond
- Medium purine containing foods (< 75 mg purine/100 g) for example: ham, chicken, eel, flounder, cocoa powder, green peas, cauliflower, broccoli, green beans, spinach, tofu, aubergine, turnip cabbage

It is known for a few years that cherries and strawberries and soft drinks containing high percentage of these fruits (fibrous drinks) are beneficial in gout.
- It is recommended to limit the consumption of high purine containing foods (75–150 mg purine/100 g), for example: pork, beef, veal, mutton, turkey, duck, rabbit, deer, venison, bacon, sausage, salami, smoked ham, cod, perch, carp, dry beans, dry peas, lentils, poppy seeds, sunflower seeds, peanuts, raisins.
- It is recommended to avoid very high purine containing foods (150–1000 mg purine/100 g), for example: yeast, meat extracts, goose, sardines, mussels, trout, herring roe, salmon, tuna, mackerel, shrimp, offal, liver, smoked meats).
Cuisine recommendations (food processing technics) for preparing low purine containing meals:

Low-fat cooking methods and tools (e.g. grilling, cooking in grill sacs/aluminum foil, teflon pots, ceramic pots etc.) should be applied when preparing meat and also side-dishes.
Pouring off the cooking water can reduce purine content of the meal.
Meals that are fortified by cooked meat extracts are not recommended (e.g. bouillon, broth, jelly).

Fluid intake: Consumption of adequate amount of fluid (at least 2.5 liters per day) is essential. Consumption of 2-3 dl of slightly alkaline mineral waters (e.g.. Parádi, Balfi) daily is beneficial in case of high uric acid levels.

Alcohol consumption: Regular alcohol consumption is not recommended for patients with gout or hyperuricaemia because alcohol increases uric acid biosynthesis and reduces its excretion. Beer (even non-alcoholic) should be avoided due to its purine source.

Recommended cookbooks that help to follow a versatile, low-purine diet.

Lifestyle
Hypertension, hyperuricemia and smoking are cardiovascular risk factors. To reduce risk factors quitting smoking, and losing weight by physical activity is recommended.

MONITORING
In addition to regular laboratory measurements of uric acid levels and home measurements of blood pressure, screening for other metabolic risk factors (diabetes, hyperlipidaemia) is recommended.

SEEKING MEDICAL ADVICE
It is important to call the patient’s attention to symptoms of colchicine poisoning like abdominal pain, diarrhea, vomiting, muscle weakness or cramps that may develop even after stopping therapy. If patient experiences any of the symptoms, urgent medical consultation is needed.

SOURCES
• Áts, Katalin; Hittner, György; Kurucz, Réka; Mandl, Péter; Mihola, Dóra; Niedermayer, Dóra; Ruzicska, Éva; Bálint, Géza; Bálint, Péter: A köszvényes ízületi gyulladás gyógyszeres kezelése [Treatment of gouty arthritis] Gyógyszerészet. 2012;387–388.


TOPIC: ECZEMA

MEDICAL HISTORY

Patient
15-year-old, slim adolescent girl with mild acne (BMI=18)

Current complaints
Her sensitive skin has been problematic since childhood. She had attended a dermatologist for a while with her mother, but quit it when her symptoms subsided. Now she is complaining about dry, sensitive and itching skin, so they have visited her paediatrician. Itching made her scratch the skin, and her arm and knee (popliteal) are particularly concerned. Besides the prescribed medications she asks for a moisturising cream.

Other diseases
No other known diseases.

Medications, natural products, dietary/herbal supplements taken
• Regularly: Zyrtec 10 mg tablets, Locoid 1 mg/g cream.
• Occasionally: None.
• What has been done to relieve the complaints? She uses Avon cosmetics.

Lifestyle, profession
She is a secondary school student. She uses few cosmetics. She goes to swim once a week with her classmates during PE classes. She do not smoke, nor consumes alcohol.

Allergies
Milk allergy.
Her mother has peanut allergy.

PHARMACIST’S INTERVENTION

Decision on dispensing medication
Zyrtec 10 mg tablets and Locoid 1 mg/g cream are dispensed. Unguentum hydrophilicum nonionicum is offered to the patient for regular use (as a base therapy).

Reason/background
In this case the patient is seeking help in the pharmacy after a medical examination. The ICD codes on her prescriptions can help us to give the best and the most useful advice to the patient.

It is important to draw the patient’s attention to avoiding use of the steroid cream on the whole skin surface as a body lotion; only the affected areas should be treated. The base therapy (emollient) should be also applied together with the steroid therapy. The emollient should be applied on the whole body. On the affected area the steroid cream should be used prior to the emollient: after the absorption of the steroid cream she can use the emollient as well.
Details of dispensed medication (based on SmPC)

ZYRTEC® 10 mg tablets (10 mg cetirizine dihydrochloride)
• Dosing regimen (single dose and maximum daily dose): 1 tablets per day (recommended in the evening, before bedtime)
• Method of administration: the tablet should be taken with a glass of water. (The extent of absorption of cetirizine is not reduced by food, although the rate of absorption is decreased.)
• Onset of action: 1 hour.
• Duration of therapy: until the symptoms persist.
• Contraindications: during the time of allergic tests (cetirizine may cause false negative results), severe renal impairment.
• Possible side effects: some people experience drowsiness, dizziness and fatigue.
• Interaction with other medicinal products and other forms of interaction: no interactions are relevant for the current patient.
• Special precautions for storage, disposal and other handling: Store below 25°C.

LOCOID® 1 mg/g cream (hydrocortisone butyrate)
• Dosing regimen (single dose and maximum daily dose): according the medical order the cream should be applied evenly and sparingly to the affected areas (1 to 3 times a day spread a little amount of Locoid cream on the affected skin areas. When symptoms are improved the dosing schedule can be reduced to once daily or 2–3 times weekly.)
• Method of administration: External use only. Wash your hands before and after use. To increase absorption massage the cream into the skin. Occlusive bandage is temporarily permitted for a better therapeutic effect.
• Onset of action: hours
• Duration of therapy: until symptoms persist. When clinical improvement occurs dose reduction and later suspension of the therapy is recommended. Do not use the cream for prevention.
• Contraindications: no contraindications are relevant for the current patient. Generally: facial rosacea, acne vulgaris, perioral dermatitis and local infections.
• Possible side effects: minimal side effects may occur during short-term treatment. In case of abuse local side effects (skin atrophy, telangiectasia, skin striae) may occur. Patients may experience hypersensivity to certain components of the vehiculum (propylparaben, cetyl stearyl alcohol).
• Interaction with other medicinal products and other forms of interaction: no interactions are relevant for the current patient.
• Special precautions for storage, disposal and other handling: Store below 25°C, do not store in refrigerator.
NON-PHARMACOLOGICAL ADVICE

Use of emollients (moisturizing creams)

- The patient should choose a moisturizer which helps keep her skin moisturized and restore skin’s natural barrier function. These preparations are the basis of eczema treatment (therefore called as base therapy). These are recommended for continuous use. Moisturizers are similar in terms that they do not contain drying agents (for example alcohol or soap).

  Manufacturers try to avoid adding potential allergenic components (for instance preservative or fragrance) to emollients, or at least to keep those additives on a minimum level.

- Swimming is not beneficial for the patient’s skin condition but she should not be dissuaded from sports and once-a-week swimming. For patients with mild eczema it is sufficient to give information on proper skin cleansing and skin care. The most important issue is washing off chlorinated water thoroughly from the skin right after leaving the pool and dry the skin using a soft (high absorbent ability) towel. Do not scrub the skin. After having a shower, body lotion should be used.

Base therapy

- Unguentum hydrophilicum nonionicum can be used not only as a moisturizer but also as a soap or a shower gel. Other preparations from FoNo VII., from the Pharmacopoeia or emollients prepared at the pharmacy (compounded products) are also available.

- Doctors often prescribe individual preparations which are made at the pharmacy. These may contain urea and glycerol.

- In contrast to steroids preparations, emollients can be applied several times a day (up to 5 times) and can be used for a long time (from weeks to lifelong). As the basis of therapy emollients should be used both at times of remissions and during flares. Emollients play a very important role in delaying the progression of the disease. Pharmacists should always emphasise the importance of these preparations.

- Patients should always be involved in choosing the proper base therapy. Pharmacists can help to choose the most appropriate preparation for the patient.

- In case of dry air the patient should use humidifier to reduce the dryness of the skin.

SEEKING MEDICAL ADVICE

If there is no improvement within a week or if the condition worsens the patient should be referred to the doctor.
SOURCES

- Ministry of Health Professional Guideline: Atopic Dermatitis. [accessed: 27.05.2015.]
  http://www.eum.hu/egeszsegpolitika/minosegfejlesztes/borgyogyaszat
- Patient information: atopic dermatitis (eczema) – Beyond the Basics.
TOPIC: ALLERGIC RHINITIS

MEDICAL HISTORY

Patient
50 year old male patient, with normal weight (BMI: 23).

Current complaints
The patient visited his GP with complaints of paroxysmal sneezing, itchy nose and congestion. The patient had been suffering from similar symptoms the previous year, however he managed his symptoms with an OTC nasal spray. This time his GP has prescribed a steroid-containing nasal spray. Checking it on the internet, the patient got concerned about using steroids, therefore he did not even plan to claim his prescription. Nevertheless, the symptoms have not ceased, and also his daughter convinced him to go to the pharmacy with his prescription. He is still doubtful and hesitating about claiming the prescribed steroid nasal spray.

Other diseases
Hypothyreosis.

Medications, other supplements taken
- Regularly: Euthyrox® 50 µg tablet (for 2 years), 1×1 daily.
- Occasionally: None.
- What has been done to relieve the complaints? Vibrocil® nasal spray (phenylephrine) has been used.

Lifestyle, profession
He does not do any sports, he has a stressful lifestyle. He is a non-smoker and never drinks alcohol.

Allergies
He is probably allergic, but it has not been proven with an allergy test.

PHARMACIST'S INTERVENTION

Decision on dispensing medication
The prescribed Nasonex® 0.05% suspension nasal spray and Eurhyrox®50 µg tablet were dispensed without any other OTC medicines.

Reason/background
In this situation our aim is to calm the patient, to resolve his uncertainty and fearful thoughts. Furthermore, the pharmacist has to promote and achieve adequate patient compliance.

The steroid content of this nasal spray is very low (50 µg mometasone/dose). Applying it locally the spray is very effective. In addition, steroid-containing nasal spray is the first choice of therapy for an allergic-type nasal congestion. Using it appropriately the likelihood of side-effects is minimal.
Highlight the advantages for the patient: the steroid is in a local spray form and barely absorbs. Therefore systemic side-effects do not occur unless the spray is used in high quantities. Thus, severe systemic side-effects occur only with extremely high doses and permanent use. (Obviously the side-effects of steroids cannot be underestimated, but they are preventable if the patient is aware of the adequate technique for use and follows the treatment plan.)

Details of dispensed medication (based on SmPC)

**NASONEX® 0.05% suspension nasal spray (mometasone)**

- **Dosing regimen:** the usual recommended dose is two actuations (50 µg/actuation) in each nostril once daily (total dose 200 micrograms). Once symptoms are controlled, dose reduction to one actuation in each nostril (total dose: 100 µg) may be effective for maintenance. If symptoms are inadequately controlled, the dose may be increased to a maximum daily dose of four actuations in each nostril once daily (total dose: 400 µg).
- **Method of administration:** Prior to administration of the first dose, shake container well and actuate the pump 10 times (until a uniform spray is obtained). If the pump is not used for 14 days or longer, reprime the pump with 2 actuations until a uniform spray is observed, before next use.
- **Onset of action:** a few minutes
- **Duration of therapy:** If no improvement in symptoms is seen after 5 to 6 weeks of twice daily administration, the patient should be re-evaluated and treatment strategy should be reconsidered.
- **Possible side effects:** Very common: epistaxis; common: pharyngitis, headache, nasal burning or irritation.
- **Contraindications:** no contraindications are relevant for the current patient. Generally: Nasonnex nasal spray should not be used in the presence of untreated localised infection involving the nasal mucosa, such as herpes simplex. Because of the inhibitory effect of corticosteroids on wound healing, patients who have experienced recent nasal surgery or trauma should not use a nasal corticosteroid until healing has occurred.
- **Interaction with other medicinal products and other forms of interaction:** no interactions are relevant for the current patient.
- **Special precautions for storage, disposal and other handling:** Do not store above 25°C. Do not freeze.

**EUTHYROX® 50 µg tablet (levothyroxine sodium)**

- **Dosing regimen (single dose and maximum daily dose):** according to the medical order 1 tablet once a day. (Generally in adults: initially 100 µg daily, preferably taken 30 minutes before the first meal of the day with a little amount of liquid. Increase the dose by 50 micrograms at three- to four-week-intervals until normal metabolism is steadily maintained. The final daily dose may reach up to 100 to 200 micrograms.)
- **Method of administration:** Taken orally with little amount of water.
- **Onset of action:** 3-5 days.
• Duration of therapy: long-term therapy.
• Contraindications: no contraindications are relevant for the current patient. Generally: thyrotoxicosis, adrenal gland disorder or adrenal insufficiency.
• Possible side effects: generally headache, flushing, fever and sweating.
• Interaction with other medicinal products and other forms of interaction: no contraindications are relevant for the current patient. Generally: Antacids, proton pump inhibitors, calcium salts, oral iron supplements, sucralfate, colestipol, polystyrene sulphonate resin and cholestyramine may decrease the effect of levothyroxine (administration should be separated by 4-5 hours).
• Special precautions for storage, disposal and other handling: Do not store above 25°C.

NON-PHARMACOLOGICAL ADVICE
• We can offer natural sea-water nasal spray and lubricating eyedrops (artificial tears).
• Keeping an allergy diary can help to better understand the nature of the disease; the recorded symptoms are a good basis for an allergy specialist. Pollen diary shows the blooming season for the different plants, therefore the problematic allergene can be detected with higher accuracy. Also a pollen and food cross-reaction table is often enclosed to these diaries.
• To avoid unexpectedly high pollen concentrations, it is worth to follow the pollen forecast regularly.
• When the pollen concentration is high, it is recommended to stay indoors. Also, closing the doors and windows is advisable to minimize the direct contact with pollens.
• Cleaning the air conditioner of the car, apartment and workplace is useful, as well as changing the filter of these devices.

SEEKING MEDICAL ADVICE
If the symptoms do not diminish/resolve, or even deteriorate, the patient should be referred to the doctor.

SOURCES
• A Fül-Orr-Gégészeti Szakmai Kollégium, a Tüdőgyógyászati Szakmai Kollégium, a Klinikai Immunológiai és Allergológiai Szakmai Kollégium és a Csecsemő- és Gyermekgyógyászati Szakmai Kollégium 2009-es ajánlása: RHINITIS Állásfoglalás és
TOPIC: ALLERGIC RHINITIS 2.

MEDICAL HISTORY

Patient
A 35 year old, wealthy male patient is present to the pharmacy in early August.

Current complaints
The patient is complaining of watery, bilateral nasal discharge. The symptom is more intensive during the morning time while on the way to his workplace (he uses several napkins). The symptom relieves when he is in the office.

Other diseases
No other known diseases.

Medications, natural products, dietary/herbal supplements taken
• Regularly: None.
• Occasionally: None.
• What has been done to relieve the complaints? Nothing.

Lifestyle, profession
He is desk-bound. He has had a new job for 6 months, works in another city, has to travel several kilometers to his office.

Allergies
No known allergies.

PHARMACIST’S INTERVENTION

Medication Dispensing
Allergodil® nasal spray is dispensed.

Reason/background
It is important to ask specific questions and get more information about the disease. The nature of respiratory symptoms may be allergic, but also can be infectious type. The pharmacist should be able to distinguish between the different origin of symptoms accurately. Severity of the disease also must be evaluated to decide whether it is our competence or the patient must be referred to a doctor for further investigations.

Based on the patient’s history giving pharmaceutical advice (and possibly OTC medication) is the optimal solution.

Late summer is the season for blooming of ragweed (ambrosia), which can cause similar symptoms. Nevertheless, setting up the diagnosis is not the pharmacist’s role, but the obvious blooming season and the coincidence of symptoms may indicate ragweed allergy. In this situation a locally acting nasal spray is recommended. In terms of the active ingredient, an antihistamine agent is a better choice than giving a decongestant. Antihistamines (e.g. azelastine) can be applied for several weeks, i.e. during the whole
pollen season if necessary. Nasal sprays are more advantageous than nasal drops, since the spray covers larger area and reaches distant regions of the nasal septum when applied properly.

**Details of dispensed medication (based on SmPC)**

**ALLERGODIL® nasal spray (azelastine hydrochloride 0.1% w/v)**
- Dosing regimen: For adults one actuation in each nostril twice daily (0.56 mg of azelastine hydrochloride).
- Method of administration: The route of application is topical (nasal mucosa). Remove the protective cap. Before first use, squeeze down the collar several times until a uniform spray emerges. The spray is now ready to use.
- Onset of action: a few minutes.
- Duration of therapy: During the allergen exposure.
- Possible side effects: Common: a substance-specific bitter taste may be experienced after administration (often due to incorrect method of application, namely tilting the head too far backwards during administration) which, in rare cases, may lead to nausea.
- Contraindications: no contraindications are relevant for the current patient.
- Interaction with other medicinal products and other forms of interaction: no specific interactions are relevant for the current patient.
- Special precautions for storage, disposal and other handling: Do not store below 8°C. Do not refrigerate. Discard product six months after first opening.

**NON-PHARMACOLOGICAL ADVICE**

**Nasal cleaning liquid, natural sea-water nasal spray, normal (physiologic) saline solution**
- The efficacy of nasal cleaning liquids is based on washing off the accumulated and deposited allergens from the nose, and on restoring the physiological function of nasal cilia. After cleaning the nose, therapeutic products (those containing an active agent) can reach the problematic areas more easily, thus the amount of medicated nasal sprays (or drops) may be reduced.
- Nasal cleaning products can be beneficial for everyone during the winter season when common cold regularly occurs.
- The pharmacist can offer lubricating eyedrops (artificial tears) if needed.

**Allergy diary**
- Keeping an allergy diary can help to better understand the nature of the disease; the recorded symptoms are a good basis for an allergy specialist. Pollen diary shows the blooming season for the different plants, therefore the problematic allergene can be detected with higher accuracy. Also a pollen and food cross-reaction table is often enclosed to these diaries.
• To avoid unexpectedly high pollen concentrations, it is worth to follow the pollen forecast regularly.
• When the pollen concentration is high, it is recommended to stay indoors. Also, closing the doors and windows is advisable to minimize the direct contact with pollens.
• Cleaning the air conditioner of the car, apartment and workplace is useful, as well as changing the filter of these devices.

**SEEKING MEDICAL ADVICE**

The patient should be asked to return to the pharmacy if the symptoms do not improve. In that case a medication with a different active ingredient (different mechanism of action) and/or a different route of administration can be chosen based on the severity of symptoms. Also the patient may be referred to the doctor if necessary.

**The patient should be referred to the doctor if the following symptoms occur:**
- unilateral nasal complaints, purulent nasal discharge
- pain around the face, headache
- loss of smell, nosebleed, facial and periorbital swelling
- fever, malaise
- moderate or severe persistent allergic rhinitis
- asthmatic symptoms

**SOURCES**

TOPIC: DERMATITIS SOLARIS

MEDICAL HISTORY

Patient
20-year-old male with light brown hair, white skin and freckles on his face.

Current complaints
During gardening in the morning his neck, shoulders, arms and face got sunburnt. He asks for a pain relief dermatologic preparation.

Other diseases
No known diseases.

Medications, other supplements taken
- Regularly: None.
- Occasionally: None.
- What has been done to relieve the complaints? None.

Lifestyle, profession
University student.

Allergies
No known allergies.

Other relevant information
The burned area is red and painful. No blisters or systemic signs (nausea, fever, headache) are present. The patient thought it was not necessary to use sunscreen in early May, therefore he did not applied it. He paid attention to adequate fluid intake (tea, juice).

PHARMACIST'S INTERVENTION

Decision on dispensing medication
Panthenol foam is dispensed.

Reason/background:
Considering the depth and extension it is a superficial sunburn, which affects <30% of body surface area. Thus, it is is expected to be well controlled by the pharmacist guided self-medication. Panthenol foam is a formulation that can be easily applied to the painful skin. As fluid intake was adequate there is no need to further increase it.
Details of dispensed medication (based on SmPC)

PANTHENOL® external foam (dexpantenol)

• Dosing regimen: apply it 1-3 times daily (maximum 3-4 times per day)

• Method of administration: The container should be shaken well before each use. Keep the container in upright position and spray to the painful area from a distance of 10-20 cm. Do not apply on mucous membranes (oral cavity, nasal cavity, etc). Do not apply directly to the face, but expel the foam into your palm first and gently spread out on the face skin.

• Onset of action: 1-2 hours

• Duration of therapy: 1-2 days

• Possible side effects:
  o Unknown frequency: contact allergy may occur.

• Contraindications: no contraindications are relevant for the current patient
  Generally:
  o Hypersensitivity to the active agent or any of the excipients.
  o Should not be applied in and around the eyes.

• Interaction with other medicinal products and other forms of interaction: no interactions are known for proper use.

• Special precautions for storage, disposal and other handling: Do not store above 25°C.

• Special warnings and precautions for use:
  o In the first seconds of the first application sometimes only the propellent is expelled before the foam appears.
  o The container is under pressure. It should be protected from direct sunlight and kept below 50°C. The empty container should not be opened or burnt. Do not store near flammable materials. Do not smoke during application.

NON-PHARMACOLOGICAL ADVICE

Prevention
Avoid direct sunlight for 2-5 days after sunburn or until skin fully regenerates.
Avoid strong sunlight (typically between 11 am and 3 pm) in the future even if topical sunscreen is used. For to patient’s skin type a sunscreen with 40–50 SPF should be used. Special attention should be paid to sunprotection of the face.

Proper use of sunscreen products:
  o apply the sunscreen before sun exposure (depending on the product formulation the onset of action is 10–30 minutes).
  o Repeat application in case of excessive sweating.
  o None of the sunscreen products provide protection against the risk of late onset malignancies resulting from UV exposure.
SEEKING MEDICAL ADVICE

If dermatitis symptoms (erythema, pain) do not resolve within a few days or in case patient recognised any new type of lesions on his skin a doctor should be consulted.

SOURCES

- Kárpáti, Sarolta; Kemény, Lajos; Remenyik, Éva: Bőrgyógyászat és venerológia [Dermatology and Venerology], Medicina 2013. pp. 263–275. (Chapter 12: Juhász, István: A bőr fizikai, kémiai és mechanikai sérülései. Sebgyógyulás. [Physical, chemical and mechanical skin injuries. Wound healing])
TOPIC: LONG TERM EFFECTS OF UV EXPOSURE

MEDICAL HISTORY

Patient
50-year-old female patient asks about the self-examination of moles (BMI=23).

Current complaints
None.

Other diseases
No known diseases.

Medications, natural products, dietary/herbal supplements taken
- Regularly: None.
- Occasionally: During the winter season she takes multivitamins.

Lifestyle, profession
She is a sporty managing director. She is fair skinned (type II) with blond hair and freckles.

Allergies
No known allergies.

Other relevant information
During the interview the patient tells that she is afraid of the susceptibility to melanoma because her mother died of malignant melanoma at the age of 55.
The patient is health-conscious, swims three times a week and follows a variable, healthy diet. She regularly goes to screening programmes (e.g. breast cancer screening), she measures her blood pressure about every 2-3 months. She is happy to participate in health screening examinations.

Warning signs – The ABCDEs of Melanoma

A – Asymmetry: One half doesn't match the other half.
B – Border irregularity: The edges are ragged, notched or blurred.
C – Color: The pigmentation is not uniform. Shades of tan, brown, and black are present. Dashes of red, white, and blue add to the mottled appearance.
D – Diameter: Width is greater than 6 millimeters (about the size of a pencil eraser). Any growth of a mole should be of concern.
E – Evolution: The symmetry, border, color, or diameter of a mole has changed over time.

“Ugly duck” sign
Melanoma is usually different in appearance from surrounding moles.
PHARMACIST’S INTERVENTION

**Decision on dispensing medication**
No medication is dispensed.

**Reason/background:**
Patient education and counselling is provided.

NON-PHARMACOLOGICAL ADVICE

**Moles/self-examination of skin manifestations**
Regular self-examination of the skin according to ABCDEs and "ugly duck" rules is important. Self-examination is informative, but not appropriate to set up a diagnosis. Diagnosis should always be based on an onco-dermatologic examination.

**Knowledge and reduction of risk factors**
Knowledge of melanoma risk factors (see box below) help prevention. The patient should understand the long-term hazards of sun and solarium use. Sunscreens (even those with high SPF) can protect against acute harms of the sunlight (i.e. dermatitis solaris), but currently there is insufficient evidence to support their effectiveness in preventing long-term effects of UV radiation.

<table>
<thead>
<tr>
<th>Risk factors for Melanoma</th>
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<tbody>
<tr>
<td><strong>Environmental factors:</strong></td>
</tr>
<tr>
<td>Ultraviolet light exposure (e.g. traveling close to the equator or to high mountains)</td>
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<tr>
<td>Sunburn (blistering/bullatosus) in childhood</td>
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<tr>
<td>Solarium use</td>
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<tr>
<td><strong>Genetic factors:</strong></td>
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<tr>
<td>Skin type I or II (Fitzpatrick classification)</td>
</tr>
<tr>
<td>High number of nevi (50+)</td>
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<tr>
<td>For 100+ nevi the risk of melanoma is increased 5-10 fold</td>
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<tr>
<td>Congenital melanocytic nevi (parents attention)</td>
</tr>
<tr>
<td>Family history of melanoma</td>
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<tr>
<td><strong>Immunological status:</strong></td>
</tr>
<tr>
<td>Immunocompromised patients (from certain diseases or medical treatments) are more likely to develop melanoma (e.g. in compared to the normal population organ transplantation increases the risk 4-fold)</td>
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</tbody>
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**MONITORING**

Skin self-examination according to the ABCDEs rule.

**SEEKING MEDICAL ADVICE**

If patient recognises suspicious lesions (according to the ABCDEs or “ugly duck” rules) she should immediately consult her health care provider and ask referral to a dermatology specialist.
SOURCES

- Kárpáti, Sarolta; Kemény, Lajos; Remenyik; Éva: Bőrgyógyászat és venerológia [Dermatology and Venerology]. Medicina 2013. pp. 762–763 (Chapter 40. Somlai, Beáta: Melanoma Malignum [Malignant Melanoma])