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Diabetes mellitus

Diabetic emergencies

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Learning objectives

- Student will learn to recognize acute life-threatening conditions of diabetes.
- Student will learn the basic principles of first aid for diabetic emergencies.

Diabetes mellitus

- “diabetes“
- a group of chronic, metabolic disorders characterized by a disorder of carbohydrate metabolism and the associated high blood sugar level
- 1 million patients in Czechia, more than 30 millions in EU
- the treatment prevents long-term complications
- in addition to a medication, the treatment includes a strict diet and a regular regimen

How does carbohydrate metabolism work in a healthy person?

- blood sugar and insulin levels fluctuate depending on food intake
- food → increase of the blood sugar level → insulin is released from the pancreas → muscles and liver can process sugar thanks to insulin → decrease of the blood sugar level

How does carbohydrate metabolism work in a diabetic?

- in diabetics, the physiological mechanism does not work
 1. the pancreas does not produce insulin at all
 2. the pancreas makes insulin, but the tissues don't respond to its releasing
- the body cannot utilize the sugar from food → high blood sugar level (hyperglycaemia)
- high sugar levels can cause long-term complications (chronic kidney disease, foot ulcer, cardiovascular disease,...)

Diabetes types, therapy

– type 1 diabetes

- the pancreas does not produce insulin at all
- early onset in children
- therapy: strict diet + INSULIN (insulin pen, insulin pump)

– type 2 diabetes

- the pancreas produces insulin, but the tissues don't respond to its releasing
- insulin production in the pancreas decreases progressively
- adult-onset, often obese
- therapy: strict diet+ drug treatment, in later stages INSULIN

Hyperglycaemia - high blood sugar level

- unrecognized diabetic or severe diabetes management mistake
- **frequent urination**
- **increased thirst**
- fatigue, **weakness**, blurred vision
- several days lasting condition
- severe dehydration may occur after a few days → **disorder of consciousness** → life threatening condition

Hypoglycaemia - low blood sugar level

- commonly in diabetics treated with insulin
 - repeated dose of insulin
 - physical activity
 - insulin taken on an empty stomach
- a person with hypoglycaemia looks like an inebriated person
- **increased appetite**, weakness, fatigue
- behavioural changes - **aggression**, nervousness, lack of concentration
- pale skin, sweating, palpitation
- after that progressive loss of consciousness and seizures → life threatening condition
- **the quick reaction of the rescuer is crucial, the condition may worsen very quickly in a few minutes!**

First aid

- the diabetic begins to behave strangely → **give him sugar**
 - conscious (holds the mug): sugar in a liquid form (sweet tea, lemonade, sugar in water)
 - unconscious - SSSABC, call an ambulance
- if a diabetic has hyperglycemia, the sugar will not significantly harm him
- if he has hypoglycemia, his condition improves after taking sugar

First aid

Caution!

- never give insulin to the patient (it should only be given by a doctor or diabetic in full consciousness)
- if a person has a disorder of consciousness, don't put a sugar cube under his tongue or pour sugar into his mouth - there is a risk of suffocation!

Diabetic equipment

– Glucagen kit



<https://www.glucagenhypokit.com>

– Insulin pen



<https://www.diastyl.cz/pomucky-aplikaci-inzulinu/>

Take home message

Always save diabetics with sugar

Learning outcomes

- Student is able to recognize acute life-threatening conditions of diabetes.
- Student understands the basic principles of first aid for diabetic emergencies.

Resources

- <https://www.cprguidelines.eu>
- <https://www.erc.edu>
- AUSTIN, Margaret, Rudy CRAWFORD a Barry KLAASSEN. *First aid manual : the Authorised Manual of St John Ambulance, St Andrew's First Aid and the British Red Cross*. Revised 10th edition. London: DK, 2016. 288 stran. ISBN 9780241241233

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