

# Eksokrina in endokrina insuficienca pankreasa po akutnem pankreatitisu

## Exocrine and endocrine pancreatic insufficiency after acute pancreatitis

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### UVOD

Eksokrina insuficienca pankreasa (EIP) in sladkorna bolezen tipa 3c (SBt3c) se lahko pojavita pri bolnikih po prebolelem akutnem pankreatitisu (AP). Incidenca EIP in SBt3c ter njuna klinična pomembnost ostajata sporni. V prispevku predstavljamo preliminarne rezultate opravljene študije.

### BOLNIKI IN METODE

Namen raziskave je bil ugotoviti, ali sta eksokrina in endokrina funkcija pri bolnikih po prebolelem AP okvarjeni in oceniti njuno povezavo z etiologijo ter resnostjo AP. Ocena eksokrine funkcije pankreasa je temeljila na koncentraciji fekalne elastaze-1 (KFE) in je bila klasificirana kot zmerno (KFE < 200 µg/g) ali hudo (KFE < 100 µg/g) znižana. Endokrina funkcija pankreasa pa je bila ocenjena po kriterijih Diabetološkega združenja Slovenije, ki so skladni s kriteriji SZO. Stopnja resnosti in morfologija AP sta bili določeni po revidirani Atlanta klasifikaciji in definicijah mednarodnega konsenza 2012. Podatki so prikazani numerično (%) in kot povprečje±standarna deviacija.

### INTRODUCTION

Exocrine pancreatic insufficiency (EPI) and type 3c diabetes mellitus (T3cDM) can occur in patients after acute pancreatitis (AP). Incidence of EPI and T3cDM and clinical significance of both remains controversial. We are presenting preliminary results of our study.

### PATIENTS AND METHODS

The aim of the study was to determine whether exocrine and endocrine pancreatic function are impaired in patients after AP and to evaluate its relationship to etiology and severity of AP. Pancreatic exocrine function was determined by the fecal elastase-1 concentration (FEC) and insufficiency was classified as moderately (FEC < 200 µg/g) or severely impaired (FEC < 100 µg/g). Pancreatic endocrine function was determined by Slovenian Society for Diabetes criteria which are in accordance with World Health Organization criteria in patients without prior DM. The severity and morphology of AP were determined by a revised Atlanta classification and definitions by international consensus 2012. Data are shown as numerous (%) and mean±standard deviation.

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## REZULTATI

Trenutno je vključenih 55 bolnikov; 36 (65,5 %) moških in 19 (34,5 %) žensk, povprečna starost je  $56,3 \pm 13,4$  let.

Najpogostejša vzroka AP sta bila alkohol ( $n=22$ ; 40 %) in žolčni kamni ( $n=22$ ; 40 %), sledijo nepojasnjeni AP ( $n=6$ ; 10,9 %), AP zaradi hipertrigliceridemije ( $n=3$ ; 5,5 %) in z zdravili povzročeni AP ( $n=2$ ; 3,6 %).

Povprečen čas sledenja po AP je bil  $2,8 \pm 4,9$  let (obdobje 1–20 let).

43 (78,2 %) bolnikov je prebolelo eno epizodo AP in 12 (21,8 %) dve ali več.

Pri 34 (61,8 %) bolnikih je bil klinični potek blag; pri 13 (23,6 %) zmerno hudo ter pri 8 (14,6 %) hudo potekajoč.

KFE je bila zmanjšana pri 9 (16,4 %) bolnikih: pri 2 bolnikih zmerno (100–200  $\mu\text{g/g}$ ) in pri 7 bolnikih močno zmanjšana ( $< 100 \mu\text{g/g}$ ).

SBt3c je bila prisotna pri 7 (12,7 %) bolnikih (2 od njih sta imela tako EIP kot SBt3c).

EIP je bila prisotna pri 9 bolnikih: pri 2 po hudem AP, pri 3 po zmerno hudem AP in pri 4 po blagem AP.

SBt3c je bila prisotna pri 7 bolnikih: pri 2 po hudem AP, pri 1 po zmerno hudem AP in pri 4 po blagem AP.

EIP je bila najpogostejša pri bolnikih z alkoholno etiologijo AP (7 od 9), sledijo žolčni kamni (2 od 9).

SBt3c je bila prisotna pri 3 bolnikih z žolčnimi kamni, 2 bolnikih z alkoholno in 2 bolnikih z hiperlipemično etiologijo.

## RESULTS

There are currently included 55 patients; 36 (65.5%) men and 19 (34.5%) women, mean age  $56.3 \pm 13.4$  years.

Most common etiologies of AP were alcohol ( $n=22$ ; 40 %) and gallstones ( $n=22$ ; 40 %), followed by unexplained ( $n=6$ ; 10.9 %), hypertriglyceridemia ( $n=3$ ; 5.5 %) and drug-induced ( $n=2$ ; 3.6 %). Mean follow-up after attack was  $2.8 \pm 4.9$  years (range 1–20 years).

There are 43 (78.2 %) patients after one attack and 12 (21.8 %) after two or more attacks.

In 34 (61.8 %) patients the clinical course of AP was mild; in 13 (23.6 %) moderately severe and in 8 (14.6 %) severe.

FEC was reduced in 9 (16.4 %) patients: in 2 patients moderately reduced (100–200  $\mu\text{g/g}$ ) and in 7 patients severely reduced ( $< 100 \mu\text{g/g}$ ).

T3cDM was present in 7 (12.7 %) patients (2 of them had both EIP and T3cDM).

EIP was present in 9 patients: in 2 after severe AP; in 3 after moderately severe AP and in 4 after mild AP.

T3cDM was present in 7 patients: in 2 after severe AP; in 1 after moderately severe AP and in four after mild AP.

EPI was more common in patients with alcoholic etiology (7 out of 9) followed by gallstone etiology (2 out of 9).

T3cDM was present in 3 patients with gallstone, 2 patients with alcohol and 2 patients with hyperlipemic etiology.

## ZAKLJUČKI

EIP in SBt3c sta se pojavljala mnogo redkeje kot v prejšnjih študijah.

EIP je pogostejša pri bolnikih z alkoholno etiologijo AP.

SBt3c ni povezana s specifično etiologijo AP.

Dosedaj nismo odkrili povezave med stopnjo AP, EIP ter SBt3c. Kljub temu bi rezultati študije lahko imeli vpliv na vsakodnevno delo zdravnikov v različnih vejah medicine (gastroenterologija, diabetologija, družinska medicina).

Sledenje bolnikov po AP bi moralo vključevati oceno eksokrine in endokrine funkcije pankreasa.

## CONCLUSIONS

EPI and T3cDM occurred much less frequently than in previous studies.

EPI is more common in patients with alcoholic etiology of AP.

T3cDM is not related to specific etiology of AP.

So far we have not found an association between severity of AP, EIP and T3cDM.

However, these results may have an impact on the daily work of the clinician in different fields of medicine (gastroenterology, diabetology and general practice). Follow-up of patients after AP should include evaluation of pancreatic exocrine and endocrine function.