CHANGES IN ANTIOXIDANT ENZYMES ACTIVITIES IN PATIENTS WITH CARCINOMA OF PANCREAS

4th Department of Internal Medicine, General Teaching Hospital and 1st Faculty of Medicine, Charles University, Prague

Kodydková J., Vávrová L., Krechler T., Žák A.

Background

Pancreatic carcinoma is a disease with high mortality and incidence. Chronic pancreatitis is an independent risk factor for development of pancreatic carcinoma. It is known, that chronic pancreatitis is associated with the generation of reactive oxygen species. The overproduction of reactive oxygen species in connection with decreased antioxidant capacity could cause oxidative stress. Increased oxidative stress could lead to pancreatic inflammation and cancer development [1] .

Methods

Thirty-four (M/F = 28/16) patients with a diagnosis of pancreatic carcinoma (CP), 34 patients with chronic pancreatitis (CHP) and 34 sex- and age matched healthy controls (CON) were enrolled in the study..

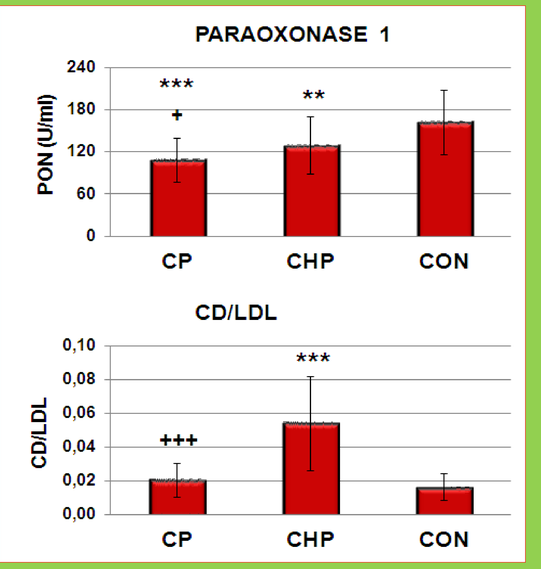
The levels of conjugated dienes in precipitated LDL (CD/LDL) in serum and reduced glutathione (GSH) in erythrocytes and activities of the antioxidative enzymes in erythrocytes: superoxide dismutase (CuZnSOD), catalase (CAT), glutathione peroxidase (GPX1) and glutathione reductase (GR); in serum: paraoxonase (PON1) were estimated as previously described [2].

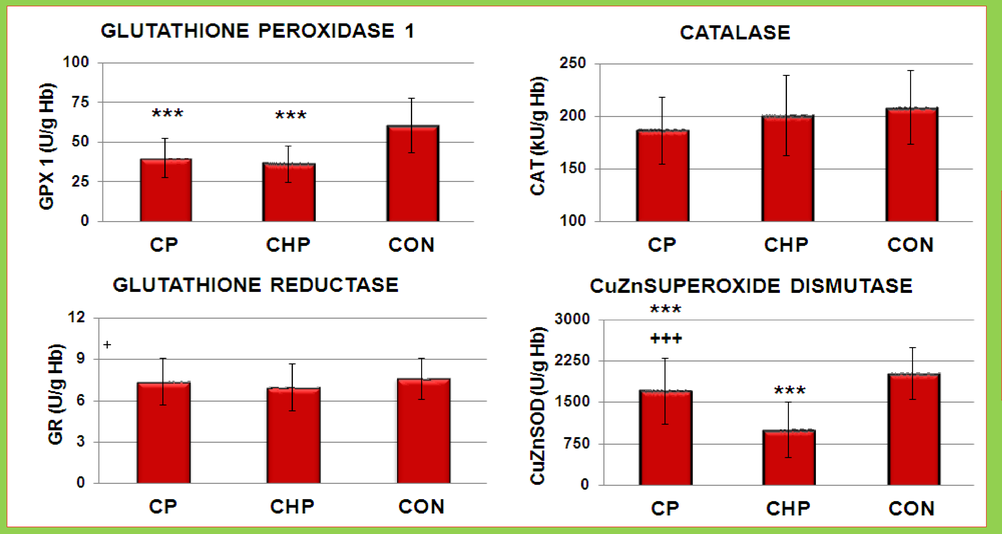
Aim

The aim of this study was to evaluate antioxidant status represented by antioxidant enzymes, non-enzymatic components and oxidative stress markers in patients with cancer of pancreas (PC) and patients with chronic pancreatitis (CHP) in comparison with healthy controls.(CON).

Results

	CP (n=34)	CHP (n=34)	CON (n=34)
Age (years)	56 (51-62)	61 (54-65)	54 (48-62)
CRP (mg/l)	15.90 (7.50-54.80) *** +++	4.65 (2.0-10.50)	3.40 (2.0-5.65)
CEA (µg/l)	2.75 (1.65-6.02) ***	2.45 (1.79-3.42)***	0.50 (0.50-0.87)
CA 19-9 (kU/l)	101.6 (8.0-2282.80)*** ++	16.70 (12.41-27.40)**	6.90 (6.50-10.0)
HDL (mmol/l)	0.89 ± 0.48 *** +++	1.57 ± 0.48	1.61 ± 0.35
Apo A1 (g/l)	0.88 ± 0.34 *** +++	1.47 ± 0.33	1.41 ± 0.21
GSH (µg/g Hb)	1898.7 (147.3-3051.3)*+	2807.2 (426.9-8417.7)	3455.7 (505.1-6684.7)





CP vs. CON ; ***p < 0.001, ** p < 0.01, * p < 0.05

CP vs. CHP; +++p < 0.001; ++ p < 0.01,+ p < 0.05

Conclusion

The results of our study show that antioxidant status is altered in both pancreatic diseases. The antioxidant defense mechanism is weakened, while the lipid peroxidation is enhanced.

References

[1] Leung SP., Chan YCh..: Role of oxidative stress in pancreatic inflammation.. Antioxid Redox Signal 2009: 11:135-165.

[2] Kodydkova J, Vavrova L, Zeman M, et al: Antioxidative enzymes and increased oxidative stress in depressive women. Clin Biochem 2009; 42: 1368-74.

Acknowledgment

Supported by the grant IGA NS 9769-4, Ministry of Health, Czech Republic.