

Abstract

Introduction: Chronic pancreatitis (ChP) is a progressive inflammatory disorder characterized by the destruction of parenchyma that is replaced by fibrous tissue. Pancreatic cancer (PC) is a serious oncologic disease with poor prognosis. There is evidence that deregulation of fatty acid (FA) metabolism is connected with a number of diseases. We decided to analyze profile of FA in plasma lipid classes in patients with ChP, with 2 type diabetes mellitus (DM), with PC and healthy people. Pattern of FA is affected by many factors including starvation, dietary intake and various pathological states. The aim of the study was to analyze FA pattern in all lipid classes in all groups of patients, to elicit eventual deficiency of essential FA and to detect relationship between clinical or biochemical disturbances and FA profile.

Material and methods: Patients with ChP (n= 39, 30/9 M/F), patients with ChP+DM (n=39, 30/9 M/F), patients with 2 type DM (n=38, 30/8 M/F) and healthy persons paired by the sex and age (n=39, 30/9 M/F) were included in the first group. Second group consisted of 84 patients with pancreatic adenocarcinoma (47/37 M/F) and 68 healthy volunteers (36/32 M/F). Anthropometric and biochemical parameters were examined by conventional methods. Profile of FA in plasma lipids was determined by capillary gas chromatography.

Results: Increased proportion of total monounsaturated FA (MUFA) in all patient groups as well as in all plasma lipid classes was observed. We proved elevations of palmitoleic, oleic and vaccenic acids. These changes were connected with increased $\Delta 9$ -desaturase of palmitic and oleic acids. We found decreased sum of n-6 polyunsaturated FA (PUFA), especially linoleic acid, in ChP and PC groups. In the 2 type DM group, proportion of arachidonic acid in phospholipids and cholesteryl esters was increased. Proportions of α -linolenic, dihomo- γ -linolenic, eicosapentaenoic acids as well as the sum of PUFA n-3 in plasma phospholipid showed negative trend with tumor staging.

Conclusion: Plasma lipid FA pattern in ChP, 2 type DM and PC patients was changed. Changes in FA profile implicated decreased fat intake, increased lipoperoxidation and some pathophysiological mechanisms responsible for disturbed FA metabolism in diseases and importance of appropriate nutritional support.

Key words: fatty acids, chronic pancreatitis, type 3c diabetes mellitus, type 2 diabetes mellitus, pancreatic cancer