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Importance of immune nutrition in the management of diabetes mellitus (Critical Care Medicine Institute, Tbilisi Georgia)

Immune nutrition is completely new and promising part of clinical nutrition. It is recommended for the management of specific, severe pathologic conditions, especially in critical conditions. Regular enteral and parenteral feeding, started in a good time already gives positive clinical effect. Immunonutrition plays an important role in the management Diabetes mellitus. Objectives - assess the clinical effect of immunonutrition ("Impact enteral" Nestle Healthcare Nutrition GmbH) in patients with diabetes mellitus type 1 and type 2. Improvement of clinical course of the disease was observed in majority of patients on immunonutrition, decreased frequency of ketoacidosis, stabilized glycemic and glycosuric profiles, significant decrease of glycosilated hemoglobin, normalized parameters of carbohydrate metabolism, which permitted to lower the doses of antidiabetic medication. Positive effects of immune nutrition were as well observed in patients with ketoacidosis, expressed in shortening the time of recovering from ketoacid toxicit.

Keywords: Diabetes mellitus, Immune nutrition, Critical Medicine

Introduction. Immunonutrition is completely new and promising part of clinical nutrition. It is based on the concept of pharmaconutrition. Pharmaconutrition consists of using increased doses of active nutrients 2-7 folds exceeding normal daily requirements (1). Nowadays nutrient supply is absolutely needful component in the treatment of critical conditions. It is especially important in hypermetabolic syndrome, when severe protein wasting and increased energy requirement is present; such as sepsis, polytrauma, head, brain injury, polyorganic dysfunction (especially acute phase), cancer, chemio and radio therapies, AIDS, systemic autoimmune diseases, chronic obstructive pulmonary disease, comatose conditions, severe intoxications (2). Regular parenteral feeding, started in a good time already gives positive clinical effect - protecting gastrointestinal mucosa, preventing stress ulcers and dysbacteriosis, improving hepatic-mesenteric blood circulation, reducing frequency of polyorganic dysfunction and infectious complications, slowing down the intensity of post intervention reactive manifestations. Including pharmaconutrients in enteral and parenteral feeding gives important additional effects, such as improvement of immunes status (3), reducing frequency and severity of infectious complications (4), stimulating proliferation of iliac and large intestine mucosa (5), enhancing intestine's barrier-protective function (6), activating muscular anabolism and normalizing nitric balance (7,8). Main components of pharmaconutrition are: antioxidants: alpha tocopherol, glutathione, etc; aminoacids: Argine, Glutamine, Ornitin - alpha-ketogluterate; lipids: Omega 3 fatty acids, short and medium chain triglycerides (2). Glutamine is non replaceable in metabolic processes; during these processes its daily requirement increases up to 15-30 grams. It is mainly used to ensure small intestine's erythrocytes energy supply by lymphoid, myocyte and microphages.

Clinically proved positive effects include: improving nitric balance (9), activating DNA synthesis in T-lymphocytes (10), suppressing development of syndrome of increased intestinal permeability (11), reducing infectious complications and dysbacteriosis (12), 6 months post-reanimation mortality (13), frequency of hospital pneumonia, bacteremia and septic conditions, hindering cancer growth (14). EPA/DPA Omega 3 fatty acids: requirements of Eicosapentaenoic and Docosapentaenoic

acids, delivered from fish oil is 1-1,5 g. per day. Pathogenically its action is related to the replacement of Arachidonic acid in the Phospholipid structure of the cell membrane and accordingly, suppression of developing inflammatory reactions in critical conditions, by Arachidonic-acid-derivatives:Thromboxine, Leukotrienes, Prostaglandins. As a result a strong systemic anti-inflammatory effect is developed (15,16).

In the international standards of enteral feeding, immune nutrition plays an important role, first of all in critical medicine (17)

Diabetes mellitus is one of the most important issues in today's public health. It usually affects several organs and organ systems. Nutrition plays an important role in the management as well as prevention of this disease. Immunonutrition has a huge clinical impact as well (18, 19, 20).

Materials and methods: 50 diabetic patients (group 1: 20 patients with diabetes type 1, labile course, aged 18-32, group 2: type 2 diabetic patients - 30, aged: 40-50 years). Patients were selected using same anthropometric and social criteria. Group 1 patients, unlike group 2, were prone to ketoacidosis. Patients from both groups were on enteral immunonutrition for 60 days - "Impact enteral" *(Nestle Healthcare Nutrition GmbH), 750 ml per day, composition of which is equal to N9 table suitable for diabetic patients, taking into account content of proteins, carbohydrates, fats and energy. In the initial phase of the treatment severe ketoacidosis was observed in 7 patients from group 1 and 4 from group 2. They were as well given nutrients enterally, 1000 ml/day. Control group consisted of 50 diabetic patients on standard table N9 diet, selected with the same criteria and distributed into same age and type 1, type 2 groups. Standard clinical parameters of the course of the disease were studied (glycemic and glucosuric profiles, dynamics of glycosylated hemoglobin, degree of ketoacidosis, acid-base balance).

Results and discussion: improvement of clinical course of the disease was observed in majority of patients on immunonutrition (71% of group 1 and 83% of group 2). 60% of group 1 patients showed decreased frequency of ketoacidosis (diagram 1), stabilized glycemic and glucosuric profiles (diagram 2, 3), statistically significant decrease of glycosylated hemoglobin (diagram 4). Normalized parameters of carbohydrate metabolism were observed in group 2 patients (pic 5, 6), which permitted to lower the doses of antidiabetic medication. Positive effects of immune nutrition were as well observed in patients with ketoacidosis, expressed in shortening the time of recovering from ketoacid toxicity. During the study period no significant dynamics in the course of disease were observed in the control group patients.

Conclusion: Pharmaconutrition with immunonutrients is an important component in the management of diabetes. Including immunonutrients favors the optimization of treatment of diabetic ketoacidosis. It is advisable to widely implement immune nutrition in diabetes management.

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იმუნური კვება დიაბეტის მკურნალობის საქმეში
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შესწავლილია შაქრიანი დიაბეტით დაავადებული 50 (ტიპი პირველი) და 20 (ტიპი მეორე) პაციენტი. ყველა ავადმყოფს აღენიშნებოდა მიდრეკილება კეტოაციდოზისკენ. შაქრიანი დიაბეტის მიმდინარეობის შესაფასებლად გამოყენებული იყო სტანდარტული კლინიკური პარამეტრები. დადგენილი იქნა, რომ იმუნური კვების დროს პაციენტთა უმრავლესობაში ხანგრძლივად უმჯობესდება დაავადების კლინიკური სურათი. სახელდობრ, დადებითი მიმდინარეობა აღენიშნებოდა პირველი ტიპის დიაბეტის მქონე პაციენტთა 71.0%-ს, და მეორე ტიპის დიაბეტის მქონე პაციენტთა 83.0%-ს. მიუთითებენ იმუნური კვების გამოყენების მიზანშეწონილობას შაქრიანი დიაბეტის დროს.