Hypermetabolism in traumatic brain injury (TBI) caused massive hormonal response to stress. Hyperglycemia in acute lesions of the brain (without the presence of diabetes) is considered as a factor that enhances the damaging processes like: intracellular acidosis, accumulation of extracellular glutamate, the formation of cerebral edema, a breakthrough blood-brain barrier, hemorrhagic transformation of cerebral infarction. The predominance of anaerobic glycolysis in CCT reduces the macroergic phosphate (phosphocreatine concentration of ATP) and the increase in AMP. Developing lactic acidosis with increased lactate in the brain tissue and CSF. Hyperglycemia is initiated at stress catabolic hormone secretion is substantially consequence dissonance between insulin secretion and developing resistance to it peripheral tissue: skeletal muscles, hepatocytes, fat tissue. This is due to the suppression of insulin secretion in the background adrenergic stimulation and glucose intolerance during TBI promotes violation of its metabolism. In patients with severe TBI glucose level greater than 11 mmol/l is associated with poor outcome. Intensive monitoring of blood glucose levels and maintaining normoglycemia can be effective neuroprotective intervention. In parallel, developing immunity of peripheral tissues to insulin, whereas endogenous glucose production is increased. This leads to impaired glucose tolerance, lipid metabolism changes and as a consequence, persistent hyperglycemia and hyperlipidemia. Despite the violation of energy utilization and plastic substrates postaggressivnom period, artificial nutrition is one of the tenets of intensive care. A number of experimental and clinical research in stroke and traumatic brain injury received evidence of the impact of stress hyperglycemia on increasing areas of ischemic brain damage and deterioration of the forecast. There are other factors affecting the degree of glycemic control such as the adequacy of anesthesia, drug polypharmacy, comorbidity, organ failure, etc. Persistent hyperglycemia can be provoked by the introduction of sympathomimetic stimulatingalfa-adrenergic receptors, as well as the appointment of glucocorticoids and cytostatics. Early nutritional support is important for patients with traumatic brain injury, which is associated with the development of these patients hypercatabolism syndrome with significant demand for calories and proteins. One of the components of the success of parenteral nutrition in patients in the intensive care unit, is the optimum rate of introduction of nutrient solutions. Inadequate provision of nutritional support increases the risk of early and late postoperative complications, sepsis, secondary immunodeficiencies, nosocomial infections, organ failure, extend the length of stay in ICU, prolongs mechanical ventilation, it increases the cost of treatment of the patient and increases the mortality rates in the ICU. Numerous studies have shown that the optimum speed of glucose administration is considered to be 2-5 mg/kg/min. Neuro intensive care patients need a special type of nutritional support, in connection with the intensification of catabolism and prolonged fasting. Researchers from the University of Shanghai (China) did a systematic review
and meta-analysis of 16 major studies on nutritional support in head injury. Summary: The findings suggest that the best outcome with enteral feeding containing immunomodulatory components via a probe mounted in the small intestine. In severe head trauma and shock syndrome - preferably parenteral nutrition. There is strong evidence of the superiority of early nutrition on mortality rates, better neurological outcome, fewer infectious complications. Next it was to compare the efficiency of enteral and parenteral nutrition. The 6 major studies have provided clear evidence of the benefits of parenteral nutrition, which is expressed in a lower mortality rates, better functional outcomes for GCS and fewer infectious complications. Also, there is evidence for the fact that the use of immunomodulatory components in enteral nutrition (arginine, glutamine, probiotics and gamma-3 fatty acids) provides a lower level of infection as compared to conventional enteral nutritional. Recommended gastric enteral administration mixtures or mixed enteral-parenteral (enteral can not be achieved if more than 60% of requirements). Summarizing the above, it should be noted that the problem of adequate correction syndrome "hypermetabolism-hypercatabolism" in patients with acute cerebral insufficiency of different genesis requires further study. At present, ready to use drugs, "three in one" in 3-chamber bag safety standards are considered to be short-term or long-term parenteral nutrition in adult patients. They are simple in operation, minimum danger of contamination of the solution, as obtained by mixing the three components of the nutrient mixture retains physical stability for a long time and is not affected by the addition of various additives, solutions of electrolytes, vitamins, trace elements etc. Amino acids, especially, L-amino acids, mainly directed to the synthesis of the protein, while carbohydrates and fats, provide the necessary energy to life processes.