

The diabetic foot (DF) is one of the most frequent late complications of diabetes, which often leads to limb amputation and affects the quality of life in patients with diabetes. Ischaemia and infection play important role in pathogenesis of DF. One form of DF is Charcot neuroosteoarthropathy (CNO), defined as a noninfectious destruction of bones and joints in the foot due to diabetic neuropathy. The subject of the dissertation thesis was divided into 3 parts: bone metabolism and CNO, ischaemia and infection in DF and new methods in the treatment of DF.

(...) In the third study, new quantitative scintigraphic parameters for assessment of CNO activity were defined and confirmed their satisfactory correlation with other parameters of CNO activity. In fourth and fifth study, good reproducibility was verified and efficiency of power spectral analysis of heart rate variability as a new method for diagnosis of autonomic neuropathy in patients with CNO. Sixth study referred to rare causes of atypical localization of CNO in the knee joint. Ischaemia and infection in DF were resolved in one study. In multivariate analysis of seventh study we approved, that risk factors for difficulty healing after minor amputation of the foot were low level of transcutaneous oxygen tension and high level of C-reactive protein before amputation. New methods in the treatment of DF were resolved in 2 studies. Eighth study showed that maggot debridement therapy in patients with DF effectively eliminated most of Gram positive and negative pathogens including infection of methicilin-resistant *Staphylococcus aureus*. In ninth study it was confirmed that Vacuum Assisted Closure in patient with DF significantly decreased the wound area, promoted wound cleaning and supported growth of granulation tissue. Results of thesis contributed to improvement of diagnosis and treatment of DF, especially in CNO on the basis of knowledge of pathogenetic mechanisms of this disease.