Summary

Composition analysis of urinary calculi with dual-energy computed tomography

Urolithiasis is among lifestyle diseases. Question the timely and accurate diagnosis is still current. Therapeutic approach in dealing with kidney stones depends on the particular chemical composition of urinary stone. Since the end of the 20th century as a new diagnostic option in the problems of urolithiasis exploring the possibility of using techniques of DECT, which now brings the possibility of the material characteristics of tissues in vivo.

The aim of the present study was to assess the accuracy of chemical analysis stone disease DECT correlation of the results with laboratory chemical analysis of urolithiasis.

The research sample of patients with urolithiasis became of the 70 individuals who underwent examination using DECT focusing on the chemical analysis of urinary calculi in vivo. Subsequently, analysis was made of laboratory extracted urolithiasis in all these patients. With regard to the distribution of urolithiasis into 4 main types according to the chemical composition of the stone was then assessed compliance DECT and laboratory methods. Consensus of both analytical methods were investigated on a small set of blind investigated calculi of known chemical composition ex vivo.

The main outcome of this work is to confirm the high accuracy of the method DECT analysis of the composition of urolithiasis and especially in determining the basic types of urinary calculi with a view to subsequently chosen therapeutic approach, which is a method for clinical use, and the main benefit of the patient. When comparing radiation burdens of diagnostic imaging methods used in the problems of urolithiasis was not confirmed by the increased radiation dose to the patient resulting from the method of analysis DECT stone.