

Kadyrleev R.¹, Mishchenko A.², Kostromina E.¹, Busko E.¹, Shevkunov L.¹, Vasiliev A.¹, Kozubova K.¹

¹N.N. Petrov National Medical Research Centre of Oncology, Dept. of Radiology, Saint Petersburg, Russia, ²City Clinical Oncology Hospital № 1, Dept. of Radiology, Moscow, Russia

Introduction & Objectives: Today, any cystic formations of the kidney are classified according to the Bosniak system. The classification has undergone a number of improvements over time aimed to decrease categories in interpretation. However, disagreements in the interpretation of cystic lesions categories II, IIF, III reach from 6% to 75%, which is not reliable in clinical practice. Contrast-enhanced ultrasound (CEUS) is a popular imaging technique that has gained great recognition in recent decades. According to research the effectiveness of CEUS in some cases is higher than contrast-enhanced computed tomography (CECT) when evaluating cystic kidney lesions. The purpose of our study was to assess the diagnostic accuracy of contrast-enhanced ultrasound (CEUS) in cystic renal lesions and to compare it with contrast-enhanced computed tomography (CECT).

Materials & Methods: The data of 44 patients with complex kidney cysts (category Bosniak \geq II) was analyzed during the period of 2015-2019. All identified cysts of Bosniak \geq III categories were histologically verified, other (categories II-IIF) are in dynamic control. The average age of patients is 58 years. CEUS performed for all patients; up to 1.2 ml of contrast (Sonovue) was administered intravenously. As a reference method CECT with enhancement and/or histological examination was used.

Results: All cystic lesions of categories B-III and B-IV (20/44) underwent surgical resection; according to the results of histological examination, 4 benign and 16 malignant tumors were obtained. In 2 out of 3 cases, CEUS category increased from B-IIF to B-III. During CT follow-up, the category was increased to B-III, and clear cell renal cancer was verified by histological examination. As a result, the sensitivity and specificity of CECT were 82.3% and 57%, respectively, the sensitivity and specificity of CEUS were 91.5% and 83%, respectively.

Conclusions: CEUS has high sensitivity and specificity in the differential diagnosis of cystic lesions. In accordance with our study, the diagnostic sensitivity of CEUS in renal cysts was higher than CECT, assuming that CEUS can be used as an optimal diagnostic tool for the evaluation of renal cystic lesions.