

Abstract

Aim: To quantify the occurrence of cystic tumours of the kidney in a population of patients with tumour of the kidney. Other goals of this study were to compare results of imaging studies with the results of final histology, to evaluate malignancy rate in each Bosniak group and to evaluate the options of surgical treatment of cystic tumours of the kidney. The emphasis was placed to determine the benefits of magnetic resonance imaging in the diagnostic algorithm of cystic tumours of the kidney.

Material and methods: All patients, who underwent surgery for the tumour of the kidney or cystic lesion of the kidney at our department in the time period 2009-17 were evaluated and patients with radiologically described cystic lesion of the kidney were included in the cohort. Lesions were classified according to CT imaging in the Bosniak categories. The unclear findings were in clinical study consulted with the radiologist. In case of uncertainties, MRI was indicated. Histological classification of all neoplasias was done according to the WHO classification 2016.

The cohort of cystic lesions (n=247) was stratified into two groups. Categories Bosniak I-IIF (n=115), which were treated surgically not for suspicion of the malignancy, but because of the size, localisation, clinical manifestation or were solved during the surgery for another renal pathology. The second cohort was categories Bosniak III-IV (n=132), there was a clear indication for the surgery because of suspicion of the neoplasia.

Results: 1826 surgically treated lesion suspected of a renal tumour. There were detected 247 (14 %) cystic lesions (Bosniak I-IV). The representation of cystic lesions in categories Bosniak I-IIF (n=115) surgically treated with other indication than suspicion of malignancy was as followed: Bosniak I - 74 cases, Bosniak II - 13 případů and Bosniak IIF - 28 cases. Lesions strictly indicated for surgery according to EAU guidelines (Bosniak III-IV) were presented as followed: Bosniak III - 61 cases and Bosniak IV - 71 cases. Malignancy rate in individual Bosniak categories described on CT was as followed: Bosniak I - 6 %, Bosniak II - 11 %, Bosniak IIF - 65 %, Bosniak III 56 % and Bosniak IV 72 %. MRI was performed in 110 cystic renal lesions with the occurrence of Bosniak categories as followed: Bosniak I - 10 cases, Bosniak II - 6 cases, Bosniak IIF - 10 cases, Bosniak III - 36 and Bosniak IV - 30 cases. As a solid tumour was described 18 cases firstly described on CT as a cystic lesion. Malignancy rate according to MRI: Bosniak IIF - 60 %, Bosniak III - 57 % and Bosniak IV - 87 %. Both CT both MRI was performed in 82 cases (33 %). The change in Bosniak classification after MRI was done in 43 cases (52,4 % of patients investigated with both modalities). Upgrade in Bosniak classification was presented in 35 cases (42,7 %), downgrade in 8 cases (9,7%)

Conclusion: Cystic tumours of kidney represent a small percent of the kidney tumours (according to our cohort 14 %). Histological spectrum on the first two places is similar with the spectrum of solid tumours (first place clear cell renal cell carcinoma followed by papillary renal cell carcinoma). On the third place is in the cohort of cystic tumours relatively rare entity - multilocular cystic renal neoplasia of low malignant potential. Up to 80 % of cystic renal lesions can be solved with nephron-sparing surgery. Using MRI in diagnostic algorithm lead to changes in Bosniak classification with direct impact on the next therapeutic management. Based on our experiences we included MRI in the standard diagnostic algorithm of cystic lesion of the kidney - especially in categories Bosniak IIF and III. In the ambiguous results described on CT, the MRI result is superior for us.

