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One Decade's Experience of the Imaging of Cystic Renal Masses

Promotionsfach: Radiologie

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Zusammenfassung der Arbeit:

Because a significant percentage of RCCs are discovered incidentally on an imaging study ordered for another purpose, the radiologist must remain vigilant. Differentiating complex cystic renal masses that require surgical intervention from those that do not remains a relatively common problem and is best characterized by CT or MR imaging. Evaluation of the number and appearance of the septa, wall thickness, interface with the kidney parenchyma and contrast enhancement characteristics of a lesion determines its nature (groups I, II or groups III, IV) and ultimate management (simple cysts or tumor suspected lesion). For patients with moderately complex cystic lesions of the kidney that fall into the Bosniak category IIF group, follow-up examinations have resulted in an effective management strategy. The steadiness of these lesions over time supports benignity and avoids unnecessary surgical intervention from being performed, whereas progression indicates neoplasm. Among cystic renal masses, the prevalence of malignancy was in category IV 50 of 54 (92.6 % of all cases in this category), in category III 34 of 52 (65.4 %) and in category IIF 2 of 6 (33.3 %); however, in categories II and I no malignant lesions were found. In our study, a statistical correlation was found among the distant metastasis and the Bosniak category IV.

In our study the majority of both CT and MR imaging findings are similar in suspected cystic renal masses. In some cases, however, MR images may depict additional septa, thickening of the wall and/or septa, or enhancement, which may lead to an upgraded or infrequently also a downgraded Bosniak cyst classification, which potentially leads to better case management. Therefore we suggest the MRI as a

problem solver to differentiate Bosniak group of IIF from II and III, which has a great therapeutic consequence.

In addition, we found that the density of the lesion on the CT exams increases more than double in contrast to the non-enhanced phase in Bosniak group III and IV. This finding might be used clinically to distinguish between patients who need a nonsurgical approach (group I, II, IIF) from those who need a surgical approach (group III - IV) in district areas where there is no or limited access to MR Imaging. In addition, our study shows a correlation between the results of Bosniak classification using MRI and the pathology of lesions, which is promising, but requires further studies.

In our experience, a complete work up of the genitourinary system (specially both kidneys) to look for the potential second coincidental urogenital tumor in cases of renal cystic masses, particularly in patients older than 60 years old, would be mandatory. However, this result has not been published before and requires further studies.

A volumetric measurement, which is in our opinion more precise than two-dimensional measurements, shows a statistical correlation between the volume of lesion and the pathology. This result is new and contradicts two-dimensional studies. Again, despite some rare publications, we found no correlation between the Bosniak classification and age or sex.

In conclusion, the Bosniak renal cyst classification has been a useful method for diagnosing and suggesting the management of complicated cysts and cystic neoplasms during the last 25 years. It has also proven useful as a vehicle for authors all over the world to compare their results in the diagnosis and treatment of complex renal cysts in the literature. The classification has been helpful for planning the correct treatment, be it performing necessary surgery or avoiding unnecessary surgery.