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Distinctive renal cell tumor simulating atrophic kidney with 2 types of cicrocalcifications. Report of 3 cases

Hes O[1], de Souza TG[2], Pivovarcikova K[3], Grossmann P[3], Martinek P[3], Kuroda N[4], Kacerovska D[3], Svajdler M[5], Straka L[6], Petersson F[7], Hora M[8], Michal M[9].

1. Department of Pathology, Faculty of Medicine in Plzeň, Charles University in Prague, Pilsen, Czech Republic; Biomedical Centre, Faculty of Medicine in Plzeň, Charles University in Prague, Pilsen, Czech Republic.
2. Department of Pathology, Hospital Aliança, Salvador, Bahia, Brazil.
3. Department of Pathology, Faculty of Medicine in Plzeň, Charles University in Prague, Pilsen, Czech Republic.
4. Department of Pathology, Red Cross Hospital Kochi, Kochi, Japan.
5. Department of Pathology, Pasteur University Hospital Kosice, Kosice, Slovak Republic.
6. Klinicka Patologia Presov, Presov, Slovak Republic.
7. Department of Pathology, National University Health System, Singapore, Singapore.
8. Biomedical Centre, Faculty of Medicine in Plzeň, Charles University in Prague, Pilsen, Czech Republic; Department of Urology, Faculty of Medicine in Plzeň, Charles University in Prague, Pilsen, Czech Republic.
9. Department of Pathology, Faculty of Medicine in Plzeň, Charles University in Prague, Pilsen, Czech Republic

Abstract:

We report 3 cases of primary renal cell tumor simulating atrophic kidney with distinct gross, morphologic, immunohistochemical, and molecular genetic features. The tumors were retrieved out of more than 17 000 renal tumors from the Plzen Tumor Registry. Tissues for light microscopy had been fixed, embedded, and stained with hematoxylin and eosin using routine procedures. The tumors were further analyzed using immunohistochemistry, array comparative genomic hybridization, and human androgen receptor. Analyses of VHL gene and loss of heterozygosity (LOH) 3p were also performed. The patients were 2 women and 1 man, with ages ranging from 29 to 35 years (mean, 31.3 years). Grossly, the neoplasms were encapsulated and round with largest diameter of 3.5 cm (mean, 3.2 cm). Follow-up available for all patients ranged from 2 to 14 years (mean, 8 years). No aggressive behavior was noted. Histologically, akin to atrophic (postpyelonephritic) kidney parenchyma, the tumors were composed of follicles of varying sizes that were filled by eosinophilic secretion. Rare areas contained collapsed follicles. Each follicle was endowed with a small capillary. The stroma was loose, inconspicuous, and focally fibrotic. Two types of calcifications were noted: typical psammoma bodies and amorphous dark-blue stained calcified deposits. Immunohistochemically, tumors were strongly positive for cytokeratins (OSCAR), CD10, and vimentin, with weak immunopositivity for CAM5.2 and AE1-AE3. WT1 and cathepsin K were weakly to moderately focally to diffusely positive. Tumors were negative for cytokeratin 20, carbonic anhydrase IX, parvalbumin, HMB45, TTF1, TFE3, chromogranin A, thyroglobulin, PAX8, and ALK. Only 1 case was suitable for molecular genetic analyses. No mutations were found in the VHL gene; no methylation of VHL promoter was noted. No numerical aberrations were found by array comparative genomic hybridization analysis. LOH for chromosome 3p was not detected. Analysis of clonality (human androgen receptor) revealed the monoclonal nature of the tumor. We describe an unknown tumor of the kidney that (1) resembles renal atrophic kidney or nodular goiter of thyroidal gland; (2) contains a leiomyomatous capsule and 2 types of calcifications; (3) lacks mitoses, atypias, necroses, and hemorrhages and nearly lack Ki-67 positivity; and (4) so far showed benign biological behavior

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Parc d’activités Activestre – 31 390 Carbonne – FRANCE
Tel.: +33 (0) 561 971 974 – Fax: +33 (0) 561 971 975
contact@innopsys.fr