Kidney: Papillary adenoma
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Identity

Alias
Renal papillary adenoma
Tubulo-papillary adenoma

Note
The concept of renal papillary adenoma is a controversial one, and has evolved over the past 3 decades. The term has historically been used to refer to small proliferations of papillary or tubulo-papillary epithelium in the renal cortex which theoretically have no metastatic potential. The size criterion in this definition is somewhat arbitrary and has become progressively smaller, from less than 3cm in early autopsy series, to more current consensus definitions restricting the lesions to less than 0.5cm.

Clinics and pathology

Disease
Renal papillary adenoma

Epidemiology
Papillary adenomas are common. They have been reported in 7% of nephrectomy specimens and 10-40% of autopsies. In autopsy series, the lesions are more common in older patients (10% of patients 70 years). There is an association with prolonged hemodialysis and acquired cystic disease. Additionally, papillary adenomas often occur coincidentally with papillary renal cell carcinoma (PRCC). A recent series of papillary adenomas in surgical specimens demonstrated that nearly 50% of adenomas were identified in patients with PRCC; less than 10% were present in the setting of other renal diseases including other renal neoplasms and end-stage renal disease.

Clinics
Most renal papillary adenomas are discovered incidentally at nephrectomy for another disease. However, with better imaging more tumors may be identified preoperatively. Multiple, bilateral papillary adenomas are referred to as renal adenomatosis.

Pathology
The current World Health Organization (WHO) classification of kidney tumors defines renal papillary adenomas as epithelial lesions with a tubulo-papillary architecture measuring less than 0.5cm and of low nuclear grade. When identifiable grossly, they are pale tan to grey, well-circumscribed, solid nodules in the renal cortex. Histologically, they are composed of varying amounts of tubules and papillae lined by cuboidal cells with scant amphophilic to basophilic cytoplasm. Most resemble type 1 PRCC. By definition, the nuclei demonstrate no atypia.

Treatment
For those renal papillary adenomas detected by imaging (rather than incidentally at surgery) treatment decisions can be difficult. Definitive classification of solid renal masses cannot be made by imaging alone. However, observation is generally recommended for solid renal masses <1cm, as these are likely to behave in a benign fashion.

Evolution
It has been proposed that renal papillary adenomas are precursor lesions of papillary renal cell carcinoma. In addition to the epidemiologic association with PRCC (see above), papillary adenomas and PRCC show similar immunohistochemical expression of alpha-methylacyl-coenzyme A racemase (AMACR).
Interestingly, papillary adenomas arising in the setting of acquired polycystic kidney disease do not show AMACR expression, suggesting a different biological mechanism for these neoplasms.

**Prognosis**
Renal papillary adenomas theoretically have no metastatic potential.

**Cytogenetics**

**Note**
Loss of the Y chromosome, and trisomy of both chromosomes 7 and 17 are early changes in renal papillary neoplasms. Some studies have found that small papillary lesions show these changes only, while PRCC show these, as well as gains of chromosomes 12, 16, and 20. However, other studies have found these additional chromosomal gains in papillary adenomas as well. Therefore, there are no definitive cytogenetic differences between the small tumors classified as adenomas and PRCC.

**Genes involved and proteins**

**hOGG1**

**Location**
3p26.2

**Note**
The human 8-oxoguanine DNA glycosylase 1 gene repairs the free-radical induced DNA lesion 8-oxoguanine. A recent study comparing papillary adenoma with PRCC and clear cell renal cell carcinoma (CC-RCC), found 8/8 PRCC and 8/9 CC-RCC had hOGG1 loss of heterozygosity (LOH), whereas none of 4 papillary adenomas showed LOH at this gene. hOGG1 may be involved in the evolution of papillary adenoma to PRCC.

**References**


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*This article should be referenced as such:*