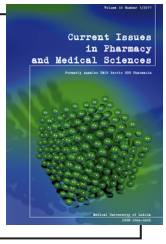
DOI: 10.1515/cipms-2017-0030

Curr. Issues Pharm. Med. Sci., Vol. 30, No. 3, Pages 162-163

Current Issues in Pharmacy and Medical Sciences

Formerly ANNALES UNIVERSITATIS MARIAE CURIE-SKLODOWSKA, SECTIO DDD, PHARMACIA

journal homepage: http://www.curipms.umlub.pl/



# Renal adenomatosis

Agnieszka Fronczek[1]*, Dorota Lewkowicz[1], Jaroslaw Swatek[1], Katarzyna Cieszczyk[1], Janusz Ciechan[2], Justyna Szumilo[1]

[1] Department of Clinical Pathomorphology, Medical University of Lublin, Poland
[2] Ward of Urology and Urological Oncology, Independent Public Health Care Centre in Pulawy, Poland

**ARTICLE INFO**

Received 07 September 2017
Accepted 05 October 2017

***Keywords:***
adenomatosis,
kidney,
renal papillary adenoma,
renal hyperplastic lesions,
papillary renal cell carcinoma.

**ABSTRACT**

Adenomatosis is a rare lesion of unknown etiology, defined as multiple (usually 5 or more) adenomas in one kidney. A case of renal adenomatosis in a 68-year-old woman treated previously for urolithiasis, who underwent nephrectomy because of the nonfunctional left kidney is reported. Apart from multiple adenomas, numerous hyperplastic lesions involving single tubules were present in the resected kidney. Both adenomas and hyperplastic lesions exhibited the expression of alpha-methylacyl-coenzyme A racemase (AMACR). Renal adenomatosis is worth special attention, since renal papillary adenomas are suggested as precursor lesions of papillary renal cell carcinoma that show similar AMACR expression.

## INTRODUCTION

Papillary adenoma of the kidney is defined as an epithelial tumor equal or smaller than 15 mm in diameter, composed of papillary, tubular or tubulopapillary structures with low nuclear grade. Multiple, usually 5 or more adenomas in one kidney are referred to as renal adenomatosis [1]. It is a rare lesion of unknown etiology. There are suggestions that adenomas can progress from multifocal renal tubular hyperplasia [2]. Adenomatosis can be found in association with polycystic kidney disease [3], uretero-pelvic junction obstruction with hydronephrosis [4] and acquired renal cystic disease [5]. There are also case reports of renal adenomas associated with papillary renal cell carcinoma [6]. Some of the reported cases showed histological and immunohistochemical similarities between papillary adenomas and papillary renal cell carcinoma that occurred in the same kidney. These observations suggest a possible progression from adenoma to papillary carcinoma [6]. We diagnosed renal adenomatosis in a 68-year-old woman treated previously for urolithiasis, who underwent nephrectomy because of the nonfunctional left kidney.

## CASE REPORT

A 68-year-old female patient suffered from chronic pyelonephritis and pyonephrosis of the left kidney. She was treated previously with extracorporeal shock wave lithotripsy (ESWL) and percutaneous nephrolithotomy (PCNL) because of urolithiasis. She was admitted to the hospital with left flank pain. Renal scintigraphy revealed the nonfunctional left kidney. Urinalysis revealed 2-3 leukocytes/hpf and 1-2 erythrocytes/hpf. White blood cells count was 10 400/µl, creatinine 1 mg/dl, uric acid 7.5 mg/dl, urea 46 mg/dl and CRP level was 5 mg/l. Left-sided nephrectomy was performed. The kidney, measuring 6×3×3 cm, with fat and fibrous capsule and with left adrenal gland, was received for pathological examination. Dilation of the collecting system and thinned parenchyma was observed, with the presence of thin walled cysts up to 1 cm of diameter. Only one whitish-gray solid nodule a 2 mm in diameter, was detected during macroscopic examination (Fig. 1).

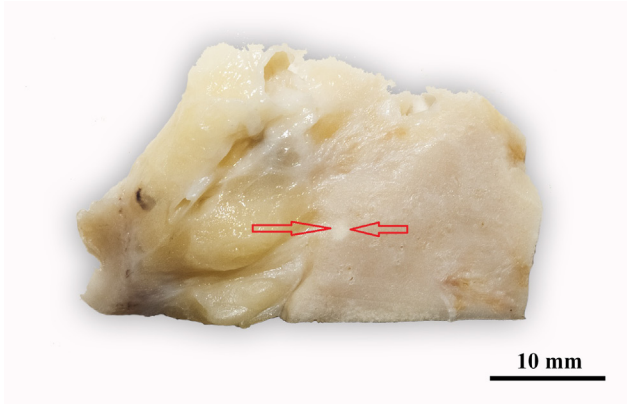



***Figure 1.*** Solitary whitish-gray nodule on cross section of resected kidney (arrow)

* **Corresponding author**
e-mail: a.m.fronczek@gmail.com

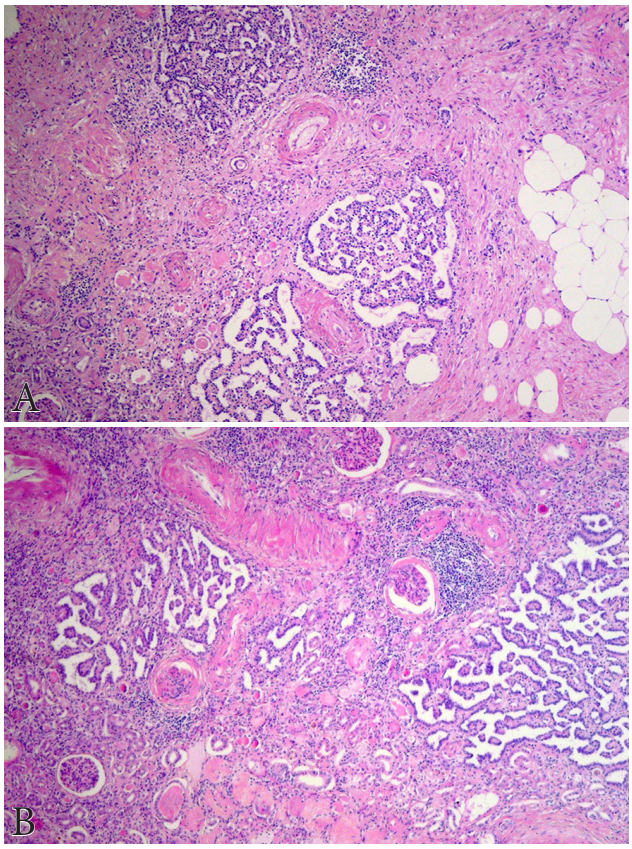



***Figure 2.AB*** Multiple hyperplastic lesions and minute adenomas of the kidney (H+E, objective magnification A-5×, B-10×)

Histopathological examination revealed chronic pyelonephritis with interstitial fibrosis, focal hyalinization of glomeruli and simple cysts, as well as arterio- and arteriolosclerosis of the kidney. Additionally multiple papillary adenomas, invisible in macroscopic examination were found, apart from the biggest one that was 2 mm in diameter. Adenomas consisted of small cells with round to oval nuclei, forming papillary and tubulo-papillary pattern (Fig.2A,B). Hyperplastic lesions involving single tubules were also noticed. Immunohistochemically adenomas and hyperplastic lesions stained positively for alpha-methylacyl-coenzyme A racemase (AMACR) (Clone 13H4, Dako, USA) (Fig.3).

## DISCUSSION

Renal adenomatosis is worth special attention since it has been proposed that renal papillary adenomas are precursor lesions of papillary renal cell carcinoma [6]. Cells of papillary adenoma and papillary renal cell carcinoma (RCC) show a similar immunohistochemical expression of alpha-methylacyl-coenzyme A racemase (AMACR) [6]. Etiology and pathogenesis of renal adenomatosis in unknown, but end-stage renal disease carries an increased risk of development of renal adenoma and renal cell carcinoma [2]. Kiyoshima *et al*. [6] presented a case of multicentric papillary RCC associated with renal adenomatosis in a 46-year-old man. Herein, some neoplastic foci revealed various overlapping features between carcinoma and adenoma. Adenomatosis can arise on the grounds of a hydronephrosis secondary to urolithiasis [7] as in our case, or in the setting of acquired renal cystic disease. Interestingly, in patients with acquired

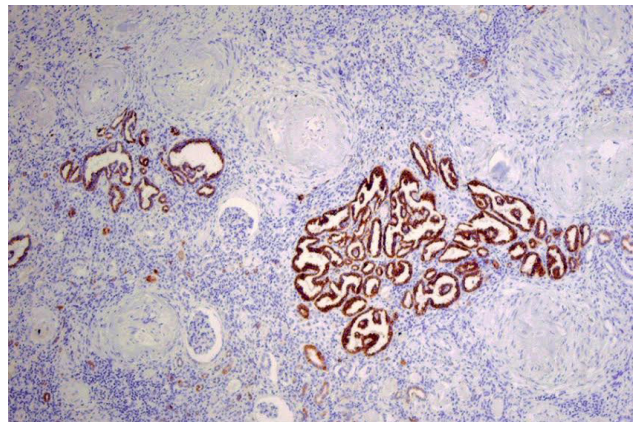


***Figure 3.*** Strong positive immunohistochemical reaction for alpha-methylacyl-coenzyme A racemase (AMACR) in adenoma and hyperplastic lesions of the kidney (Dako EnVision FLEX System, objective magnification 5×)

polycystic kidney disease, papillary adenomas do not show the expression of AMACR, suggesting the involvement of a different biological mechanism [8]. In our case, foci of papillary renal cell carcinoma were not found, but apart from multiple adenomas, numerous hyperplastic lesions were present. Both adenomas and hyperplastic lesions exhibited the expression of AMACR. Kizaki *et al*. [2] suggest that hyperplastic lesions may progress multifocally to adenomas.

## CONCLUSIONS

Frequent concomitance of multiple adenomas, hyperplastic lesions and papillary RCC, as well as their common histological and immunohistochemical features, lead to conclusion that the progression from hyperplastic lesions through adenomas may lead, in some cases, to the development of papillary RCC.

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