



## CYSTIC RENAL DISEASES

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**Summary.** The authors present the results of the cystic renal diseases treatment recorded at the Clinic of Urology in Belgrade (during the period 1990–1998). The total of 84 patients were surgically treated for different types of the cystic renal diseases during the 8-year period. The simple renal cyst was evidenced in 60 patients, out of whom 55 underwent cyst resection. Neither postoperative complications nor relapse of the cyst developed in any of the patients. Four patients with renal echinococcus underwent nephrectomy, while out of 8 cases of renal polycystic disease, nephrectomy was performed in 5 either due to the presence of the pyocyst as a complication (infection) or as a preparative measure for kidney transplantation. Malignant cysts were diagnosed in two cases (2.5%) and both patients have survived far more than 5 years free of complications.

**Key words:** Cystic disease, kidney, treatment

### Introduction

The kidney is prone to cyst formation to the greater extent than other organs in the human organism. The cysts of all sizes may be found and they may be either solitary or multiple. They can be localised on one or both kidneys simultaneously, regardless of the age. De Werd and Simon (1956) established 7 criteria characterizing simple renal cysts:

1. They must be unilocular
2. They must not communicate with the pelvis
3. They must be covered with the epithelium
4. No renal elements are allowed to be present within the cyst
5. They must be localized in the kidney
6. Unaffected renal tissue must be normal
7. The ureter and pelvis must be present and appropriate.

The permanent kidney (metanephros) is formed from the two, initially different basic structures. The system of the draining ducts is formed from the so called ureteral bud, which further evolves into the renal pelvis, major and minor calices and collectory ducts. The nephrons are formed upon differentiation from the mesenchyma-like tissue similar to the one from the so called metanephrogenic blastema which is formed from the mesodermis. Each new collectory duct gets its own part of the metanephrogenic tissue from which nephron parts will be subsequently formed. The connecting process lasts during the first postnatal week. Occasionally, connecting of nephrons with collectory ducts may fail to occur when blood plasma ultrafiltrate

is collected in the nephron lumen which leads to development of the cystic formations.

Currently, there is no satisfactory clinical and pathological classification and it is hard to distinguish precisely certain forms of the cystic diseases, while the terms may also be difficult to understand since the same lesions are frequently differently designated. The most acceptable currently available classification of the cystic renal diseases is the one developed by Gray and Skandalakis (1972) who categorized the cysts as those of presumably embryonal origin and those of presumably non-embryonal origin.

### Material and Methods

During the 8-year period (1990/1998) the total of 84 patients were hospitalized for the different types of the cystic renal disease. The youngest and the oldest patients were aged 26 and 84 years, respectively, while male to female ratio was 41 to 43. As for the symptoms, renal pain of different quality and intensity was the most predominant. Microhematuria was evidenced in 22 patients, while gross hematuria developed only in 2 patients. Hypertension was recorded in 10% of the patients. In all cases we performed the surgical procedure.

### Results

Majority of the patients (60 cases) were surgically treated for the simple renal cysts, and 55 of them (92%) underwent cyst resection (Table 1). In 52 patients the

cyst was unilocular while in 86% of the patients it was localized in the renal poles. The content of the cysts was always serous.

Table 1. Surgical interventions due to cystic renal diseases  
(Clinic of Urology – Belgrade 1990–1998)

Disease (type)	Number	Operation type	Number
Simple cyst	60	Nephrectomy	5
		Cyst resection	55
Pyocyst	2	Nephrectomy	1
		Cyst resection	1
Hematocysts	1	Nephrectomy	
Echinococcus	4	Nephrectomy	4
Polycystic disease	8	Nephrectomy	5
		Cyst resection	2
		Pyelotomy	1
Cyst - calculus	1	Nephrectomy	1
Cyst and TB	1	Nephrectomy	1
Malignant cyst (tumor)	2	Radical nephrectomy	2
Total	84 cases		84 surgeries

In 4 cases with renal echinococci, out of whom 3 were diagnosed preoperatively and 1 intraoperatively, nephrectomy was performed. Follow-up examinations performed in these patients showed satisfactory results.

Out of 8 patients with renal polycystism, 5 underwent nephrectomy due to the presence of pyocyst or as a pretransplantation procedure.

In one case, the specific process, i.e. tuberculosis was diagnosed along with the cyst and nephrectomy was performed. During the observed time interval malignant cyst, i.e. cystic tumor of the kidney was diagnosed in two cases and therefore both patients underwent radical nephrectomy. Both patients have survived free of any complications for more than five years.

In most of the cases the diagnosis was established using the available diagnostic procedures (urography, nephrotomography, ultrasonography, computerized tomography, radiorenogram and renal scintigram, angiography). In several cases, the cysts were previously punctured and cystography was performed. Some patients also underwent magnetic resonance imaging (MRI). Murray (1994) suggested in his study the significance of MRI in diagnosis of the cystic carcinoma of the kidneys.

## References

- Ambrose SS, Lewis EL, O'Brien DP, et al. Unsuspected renal tumors associated with renal cysts. *J Urol* 1997; 117: 704.
- Carson WJ. Solitary cysts of the kidney. *Ann Surg* 1928; 87: 250-256.
- De Weerd JH, Simon HB. Simple renal cysts in children. *J Urol* 1975; 75: 912-921.
- Gray WS, Skandalakis EJ. *Embriology for surgeons*. W. B. Saunders Company, 1972.
- Hulbert JC. Laparoscopic management of renal cystic disease *Semin Urol* 1992; 6: 239.
- Holmberg G, Hietala SO. Treatment of simple renal cysts by percutaneous puncture and installation of bismuth-phosphate. *Scand J Urol Nephrol* 1989; 23: 207.
- Rubenstein S, Hulbert JC, Pharand D. Laparoscopic ablation of symptomatic renal cysts *J Urol* 1993; 150: 1103.
- Murray J, Entace S, Breatnach E. MR diagnosis of hemorrhagic cystic renal cell carcinoma. *J Comput Assist Tomogr* 1994; 18: 68.
- Singleton, R. *Simple renal cysts*. Current Urologic Therapy. Second edition. W. B. Saunders Company, 1986

## Discussion

When the diagnosis of the renal cyst is once established surgical treatment is not indicated except in cases of onset of complications. Surgical treatment is indicated in case of development of infections and pain persisting even after puncture of the cyst (Holmberg, 1989) as well as in cases of obstructions of the ureter or renal parenchyma. Surgical treatment may also be required in order to rule out possible carcinoma when all other diagnostic tests are proved to be inconclusive (Rendall Singleton, 1986, Ambrose, 1977). Our results were consistent with those reported by Carson (1928) and DeWard and Simon (1956) with respect to unilaterality or bilaterality of the cyst, its localization and solitariness. It is important to mention that malignant cysts were evidenced in 2.5% of the patients, which is rather high incidence and it should be kept in mind when cyst puncture is performed. Cytological examination of the cyst fluid should be mandatory and it should be also analysed for the presence of fats which are always completely absent in case of the typical renal cyst. As for the treatment of renal cysts, Holmberg (1989) suggested percutaneous puncture and instillation of bismuth phosphate. Laparoscopy is the method which has been recently used in treatment of the renal cysts (Halbert, 1992, Robinson, 1993).

The kidney is more liable to cystic formation than any other organ in the human organism. The experience gained at the Clinic of Urology in Belgrade (during the period 1990-1998) indicates that simple renal cysts were the most predominant in the surgical material, followed by renal polycystism and renal echinococcus. In spite of the all applied diagnostic methods, from urography to MRI applied in 2 cases (2.5%), malignant renal cysts were also intraoperatively diagnosed, when radical nephrectomy was performed. Therefore, one must be extremely cautious, particularly when cyst puncture is performed instead of surgical treatment. In 4 cases with renal echinococcus nephrectomy was performed, and only in one case the diagnosis was established upon exploration.

## CISTIČNA OBOLJENJA BUBREGA

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*Kratak sadržaj: Autori iznose rezultate Urološke klinike u Beogradu (za period 1990–1998) za cistična oboljenja bubrega. U periodu od 8 godina operisana su 84 bolesnika zbog različitih tipova cističnih oboljenja bubrega. U 60 pacijenata radilo se o prostoj bubrežnoj cisti i u 55 slučajeva je učinjena resekcija ciste. Nije bilo postoperativnih komplikacija, niti se cista ponovo javila. U 4 bolesnika sa ehinokokom bubrega učinjena je nefrektomija, a od 8 slučajeva bubrežnog policistizma kod 5 pacijenata je učinjena nefrektomija ili zbog postojanja piociste kao komplikacije (infekcija) ili kao priprema za transplantaciju bubrega. U 2 slučaja (2,5%) je djagrostikovana maligna cista i učinjena je radikalna nefrektomija i oba pacijenta žive preko 5 godina bez komplikacija.*

*Ključne reči: Cistična oboljenja, bubreg, lečenje*

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