

RESEARCH COMMUNICATION

Clinical Evaluation of Parapelvic Renal Cysts: Do These Represent Latent Urological Malignant Disease?

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Abstract

Purpose: The parapelvic renal cyst is a relatively common finding on routine urological examination, but only rarely needs treatment. We here examined all parapelvic renal cyst patients who consulted our Department between April 1998 and December 2004 with the focus on potential for malignant development. **Materials and Methods:** A total of 73 patients were diagnosed as having parapelvic renal cysts by ultrasonography, in combination with computed tomography, and/or drip infusion urography in our Department. The background to diagnosis was suspicion of hydronephrosis in 15, flank and/or back pain in 15, and macroscopic hematuria and/or occult blood urine in 12. **Results:** There were 3 patients with renal pelvic cancer, and one patient with ureteral cancer. Nephro-ureterectomy was performed for all of these 4 cases. There were 10 patients with renal stones, three of which were given extracorporeal shock wave lithotripsy and one pyelonephrolithotomy. A further three underwent parapelvic renal cyst puncture, performed to preserve renal function or obtain release from symptoms. The remaining 3 cases were symptomless, diagnosed after routine examinations, and were simply followed up, as with the other 59 cases with no stones or cancer. **Conclusions:** Unless a parapelvic renal cyst causes pyelonephritis, symptomatic renal stones, or back discomfort, treatment is not indicated. However, the possibility that urological malignant disease may be encountered should be borne in mind and appropriate diagnostic measures should be performed. Furthermore, careful follow up of parapelvic renal cyst patients may be required.

Key Words: Parapelvic renal cyst - latent cancer - urological malignancy

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Introduction

Simple renal cysts are quite common in adults, with reported incidences of at least 20% by age 40 and 33% at age 60 (Laucks and McLachlan, 1981). Parapelvic renal cysts are a relatively rare form of simple renal cysts, but because of their location, are intimately associated with the vessels of the renal hilum and symptoms of obstruction (Hinman, 1978; Holmberg and Hietala, 1989). The majorities were symptomless and found by chance, but occasionally lesions were detected because of pain, occult blood in the urine, pyelonephritis, high blood pressure, or deterioration in renal function. If infection, hydronephrosis, or urinary calculi arise due to obstruction, treatment is necessary but otherwise a conservative approach can be adopted.

One complication with parapelvic renal cysts is that they may hide malignant lesions. It is also unclear whether they might themselves contribute to neoplastic development. We therefore investigated a total of 73 patients diagnosed with parapelvic renal cysts by ultrasonography (US), computed tomography (CT), and/

or drip infusion urography (DIU), and examined possible association with malignant disease, taking into account mechanisms of cyst development in the literature.

Materials and Methods

A total of 75 patients were diagnosed as having parapelvic renal cysts by US, in combination with CT, and/or DIU between April 1998 and September 2009 in our Department. The cases were found on examination for hydronephrosis, or to determine the cause of occult blood or pain, but many were accidentally detected on CT or US for non-renal disease. When malignant disease was suspected or macroscopic hematuria persisted, magnetic resonance imaging and/or retrograde pyelography were performed.

Results

The median age of the 75 patients was 62.1 years (range, 28-88 years, men 45, women 30). The background to diagnosis was suspicion of hydronephrosis in 15

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Table 1. Patient Characteristics

Characteristic	Number	Malignancy	Stone ⁵
Male: Female = 43:30			
Age : 28-88 (Mean 62.1)			
Chief complaint: Hydronephrosis	15	1 ¹	1
Flank and/or back pain	15	2 ²	6
Macroscopic hematuria and/or occult blood urine	12	3 ³	1
Incidental	34	5 ⁴	5
Treatment			
ESWL	10 ⁵		
PNL	1		
Puncture	3		
Nephro-ureterectomy	4		

ESWL, Extracorporeal shock wave lithotripsy; PNL, Pyelonephrolithotomy; ¹renal pelvis carcinoma; ²ureter carcinomas; ³2 renal pelvis carcinomas; ⁴2 bladder carcinomas and 3 prostate carcinomas; ⁵3 renal stones and 7 ureter stones

patients, flank and/or back pain in 15, and microscopic hematuria and/or occult blood urine in 12. In the other cases the finding of cysts was incidental. All the characteristics of the patients are summarized in Table 1. There were 10 patients with renal stones, three of which underwent extracorporeal shock wave lithotripsy (ESWL), one pyelonephrolithotomy, and three parapelvic renal cyst punctures, performed to preserve renal function or obtain release from symptoms. And there were 7 patients with ureter stones, they were performed ESWL.

Three patients were diagnosed as having renal pelvis carcinomas and one with a ureter carcinoma. Nephro-ureterectomy was performed on all these patients.

Discussion

In the present study, of a total of 75 cases, only 4 were associated with intrarenal pelvic carcinomas. A further ten demonstrated stone formation but the remainders were without major symptoms requiring treatment. A number of terms have been used for cysts adjacent to the renal pelvis or within the hilum: peripelvic cysts, parapelvic cysts, renal sinus cysts, parapelvic lymphatic cysts, hilum cysts, cysts of the renal hilum, and peripelvic lymphangiectasis. Generally, the cysts are caused by aging change of the renal parenchyma (Laucks and McLachlan, 1981, Shah et.al. 2007), but only rarely need treatment. Almost all cases are followed up and some treatment is necessary when they are associated with inflammation, obstruction, or calculus formation. Recently, Shah et al. reported the 5 year outcomes of the 8 patients treated with percutaneous ablation of obstructing parapelvic renal cysts (Shah et.al. 2007). And some papers associating parapelvic cyst management were reported (Matsuoka et al. 2006; Kiryluk and Gupta 2007).

One etiologic theory suggests that lymphatic cysts are secondary to obstruction. Kutcher and associates noted that lymphatic cysts or ectasia may also be found in abdominal organs other than the kidney; these investigators refer to the condition in the renal sinus as "peripelvic multicystic lymphangiectasia." In one of their patients, the cysts were lined by endothelial cells, and the fluid contained lymphocytes. The intrarenal lymphatics

also were dilated, with focal cyst formation. Such cysts can cause obstruction or even extravasation of contrast medium during urography (Kutcher et.al., 1987). In particular, peripelvic cysts have an obscure etiology, however, and multiple origins have been postulated (Deliveliotis and Kavadis, 1969; Elkin and Bernstein, 1969; Pollack et.al., 1981; Shah et.al. 2007). One theory, for which some histological and radiographic proof exists, is that these small cysts are lined by cells of the lymphatic system and develop because of lymphatic pressure resulting in significant dilation of the proximal lymphatic vessels (Keyl et.al., 1973). While not all investigators have been able to confirm a lymphatic origin, Scholl found the walls of 2 peripelvic cysts to be consistent with endothelial tissue and he concluded that they were probably lymphatic in origin (Scholl, 1948). Vela-Navarrete and Garcia Robledo also stated that histological examination of 5 similar cases was suggestive of lymphatic vessels (Vela-Navarrete and Garcia, 1983). In our four cases with renal cancers, it is possible that the tumors caused alteration in the lymph flow and therefore contributed to cyst formation.

Regarding differential diagnosis from renal carcinoma, DIU, retrograde pyelography and MRI is generally employed but in our series, clear differences in filling defects were only evident in one case. If a parapelvic renal cyst is encountered, careful examination for malignant tumors should be made by CT, MRI, DIU and retrograde pyelography with appropriate follow up.

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