

Pyocalycosis: A Report of Two Cases of Complicated Hydrocalycosis

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Key Words

Pyocalycosis · Hydrocalycosis · Infundibulopelvic stenosis · Kidney

Abstract

Hydrocalycosis is defined as cystic dilatation of a major calyx with a demonstrable connection to the renal pelvis and an epithelial lining of the cyst wall. Although this condition has long been known, there are no sufficient data concerning this pathology in the literature. In this study, we present two complicated hydrocalycosis – ‘pyocalycosis’ – and discussed the therapeutic approaches.

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Introduction

Hydrocalycosis is a very rare cystic dilatation of a major calyx with a demonstrable connection to the renal pelvis. Although its etiology has not been conclusively established, it denotes dilatation of one or more calices due to possible infundibular stenosis, which may be intrinsic or extrinsic [1].

Even though hydrocalycosis has long been recognized, there are no sufficient data in the available litera-

ture concerning the diagnosis, management and prognosis of this condition in childhood. Furthermore, there is no report regarding the complications of hydrocalycosis. In this study we present two cases of complicated hydrocalycosis – ‘pyocalycosis’ – and discuss treatment modalities.

Case Reports

Case 1

A 13-year-old male patient was admitted to the emergency department with fever and abdominal pain. His physical examination revealed right costovertebral, upper and lower quadrant tenderness. Laboratory tests showed leukocytosis and leukocyturia. Abdominopelvic ultrasonography showed a 5-cm anechoic cystic lesion with internal septations on the upper pole of the right kidney. An ultrasound-guided nephrostomy catheter was placed into the cyst for drainage of the renal abscess, and appropriate antibiotic treatment was initiated. Antegrade pyelography was performed via the nephrostomy catheter after 2 weeks. Pyelography clearly revealed a dilated upper pole calyx and connection between the lesion and the renal pelvis. Contrast material was seen to be extracted from the renal pelvis and the right ureter without any blockage. The rest of the right kidney anatomy was normal (fig. 1). The patient was operated with the diagnosis of infected hydrocalycosis (pyocalycosis) following medical treatment. Right partial nephrectomy was performed in the surgery. The patient remained asymptomatic during the 14-month follow-up.

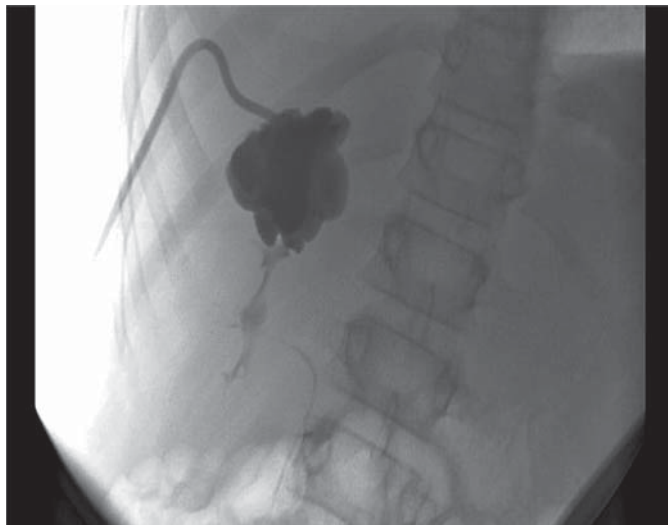


Fig. 1. Antegrade pyelography clearly showed a dilated upper pole calyx and a connection between the lesion and the renal pelvis. Contrast material was seen to be extracted from the renal pelvis and the right ureter without any blockage.

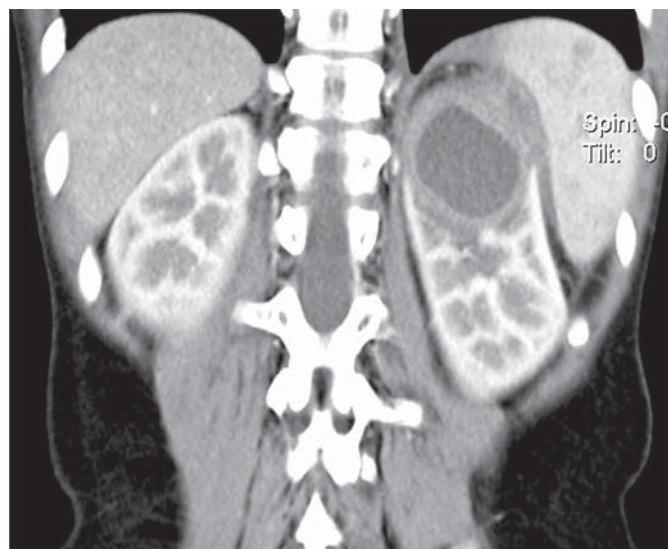


Fig. 2. CT showed an upper pole cyst of the left kidney.

Case 2

A 12-year-old girl was referred to our clinic with left flank pain and fever. Physical examination revealed abdominal and left costovertebral tenderness. There was an increased white blood cell count in the hemogram. Renal function tests were normal. The urine contained dense renal epithelial cells, pus cells and debris. Abdominal ultrasonography showed a thick-walled, dense-content, 3-cm cystic lesion in the upper pole of the left kidney. After the patient had been admitted to our department, appropriate antibiotic treatment was started with the diagnosis of renal abscess. Computed tomography (CT) was done after treatment with antibiotics for 2 weeks, showing an upper pole cyst of the left kidney (fig. 2). Additionally, the radiologist stated that there was a possible relation between the lesion and the collecting system in the left kidney on CT scan. In view of these findings, the patient was operated with the diagnosis of pyocalycosis, and left partial heminephrectomy was performed. A diminutive connection between the cyst and the renal pelvis was shown during surgery. The patient has been followed for 12 months and she still remains asymptomatic.

Discussion

In 1841, Rayer first described cysts of the kidney arising from the dilatation of a solitary renal calyx and named the entity 'cystes urinaires' [2]. This interesting phenomenon was first termed as hydrocalycosis by Watkins [3] and Winsbury-White [4] in 1939. In 1968, three cases of single cysts communicating with the renal pelvis through

a narrow infundibulum in children were reported [5]. Ever since we have not reached any sufficient data in the literature regarding hydrocalycosis. This may be due to the fact that its pathology is difficult to comprehend.

Hydrocalycosis is defined as cystic dilatation of a major calyx with a demonstrable connection to the renal pelvis and an epithelial lining of the cyst wall [6]. It generally appears in the upper pole. The etiology of this condition is still obscure, although several etiologic factors have been reported in the literature. Cystic dilatation of the calyx due to the presence of a crossing arterial branch causing obstruction of the infundibulum of the upper calyx or primary infundibulopelvic stenosis has been described [7, 8]. Conversely, hydrocalycosis has been reported to occur without an obvious cause [5]. Actually, infundibulopelvic stenosis is an extremely rare form of hydrocalycosis in which dilated calices drain through stenotic infundibula into a renal pelvis [8, 9]. Generally, intravenous urography clearly reveals the communication between the hydrocalycosis and the renal pelvis.

Although the most frequent symptom is upper abdominal or flank pain, the clinical findings are usually nonspecific. Urinary stasis in the hydrocalycosis can lead to urinary infection or hematuria, or both [1]. On the other hand, abscess or purulent infection of hydrocalycosis has not been reported yet. Both our cases presented clinical findings of renal abscess such as fever, costovertebral

tenderness and flank pain, and we named this clinical picture complicated hydrocalycosis or pyocalycosis.

Conventional diagnostic tools such as ultrasonography, intravenous urography and occasionally CT and retrograde ureteropyelography are generally adequate for a correct diagnosis. In our cases, ultrasonography and CT showed the cystic lesions on the upper pole of the kidney. In one case, a nephrostomy catheter was placed for drainage of the abscess. Then, antegrade pyelography was performed via the nephrostomy catheter, detecting a connection between the lesion and the renal pelvis. According to these findings, we realized that the diagnosis was infected hydrocalycosis at that time. In the second case, we thought that it might be infected hydrocalycosis because of a possible relationship between the cyst and the collecting system on CT. The definite diagnosis was made when the connection between the cyst and the renal pelvis was identified during surgery.

Hydrocalycosis must be differentiated from a large calyceal diverticulum, megacalycosis, and multiple dilated calyces secondary to ureteral obstruction, calyceal club-

bing, as a result of recurrent pyelonephritis, medullary necrosis or renal tuberculosis [6]. However, when hydrocalycosis is complicated by infections as in our cases, it is difficult to distinguish between other complicated cystic lesions of the kidney such as infected simple cyst, specific or nonspecific renal abscess. Hydrocalycosis due to vascular obstruction is usually treated by dismembered infundibulopyelostomy. Intubated infundibulotomy or partial nephrectomy have been performed if the cystic dilatation was caused by an infundibulopelvic stenosis [1, 7, 9]. However, as in our cases, complicated cases may require intensive medical treatment for adequate control for pyocalycosis in the beginning. After that, surgery becomes necessary and partial nephrectomy is generally the preferred method of surgical treatment.

In conclusion, we suggest that pyocalycosis is an infective complication of hydrocalycosis. It can easily be distinguished from other infective complications of the kidney such as pyonephrosis or renal abscess. Partial nephrectomy is a good choice for surgical treatment after appropriate antibiotherapy.

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