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BRIEF REPORT

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A giant urinoma in a neonate without obstructive uropathy

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Abstract We report a neonate with a giant urinoma and renal failure. A 7-day-old boy had a giant abdominal mass of 6.5 cm × 8 cm in the right quadrant, gastroesophageal reflux, and renal failure caused by the compression from the mass. Radiological observations revealed a multiseptated cyst and neither kidney could be detected. To relieve these symptoms percutaneous drainage was performed. The contents of the fluid were similar to the patient's urine. The symptoms were improved by the drainage, and we found the left kidney to be absent and the right kidney small. Four prenatal ultrasound scans detected no cystic lesions in his abdomen. Neonatal urinomas are commonly complicated by obstructive uropathy, such as posterior urethral valves or ureteropelvic junction obstruction. These obstructive uropathies were ruled out by retrograde pyelography and voiding cystourethrography. A severely dilated upper pole of a double collecting system was also ruled out by intravenous pyelography and direct observation of the kidney during an open biopsy. The cause of the urinoma is still uncertain, but trauma during delivery and the dysplastic right kidney may be involved.

Key words Urinoma · Dysplastic kidney · Obstructive uropathy · Delivery · Neonate

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Introduction

Urinoma is defined as an encapsulated collection of extravasated urine in the perirenal space [1, 2]. Extravasation of urine into the perirenal fat causes lipolysis and inflammatory and fibrotic reactions, which may result in the formation of a fibrous sac around the collected urine. Urinomas occur most commonly following renal trauma. Other major causes include obstructive uropathy, such as posterior urethral valve and ureteropelvic junction obstruction [3]. Perforation of the collecting system during an endosurgical procedure is also a frequent cause of urinoma [4].

We report a neonate with giant urinoma uncomplicated by obstructive uropathy. The cause of the urinoma is still uncertain, but the fact that prenatal ultrasonography showed no cystic lesions in the abdomen suggests that trauma during delivery and a dysplastic kidney might have been involved.

Case report

A 7-day-old boy was transferred to our hospital due to a giant abdominal mass, recurrent vomiting, and renal failure. He had a normal vaginal delivery at 38 weeks of gestation, and the duration of labor was about 6 h. He weighed 2,870 g. At 1 day of life he was found to have a giant mass in the right quadrant. There was no consanguinity or prenatal or family history of renal disease. No abdominal cystic lesions and no oligohydramnios were observed on four prenatal ultrasound scans. The gynecologist was able to detect the right kidney, but could not detect the left kidney at 30 weeks of gestation. It was impossible to detect his left kidney at the last ultrasound examination performed at 36 weeks of gestation because the normal site of the kidney was located behind the vertebrae.

On admission to our hospital, he had a solid giant mass of 6.5 cm × 8.5 cm in the right quadrant. He showed no respiratory distress, but had started to vomit from the 5th day of life. Abdominal ultrasonography and computed tomography revealed that the mass consisted of a giant cyst with multiple septa (Fig. 1a, b). Neither kidney could be located, and he had no ascites. However, there was urine output and urine could be seen in his bladder by ultrasonography. Laboratory examinations revealed renal failure: urea nitrogen, creatinine, and potassium concentrations were 8 mg/dl, 2.9 mg/dl, and 7.6 mEq/l, respectively.

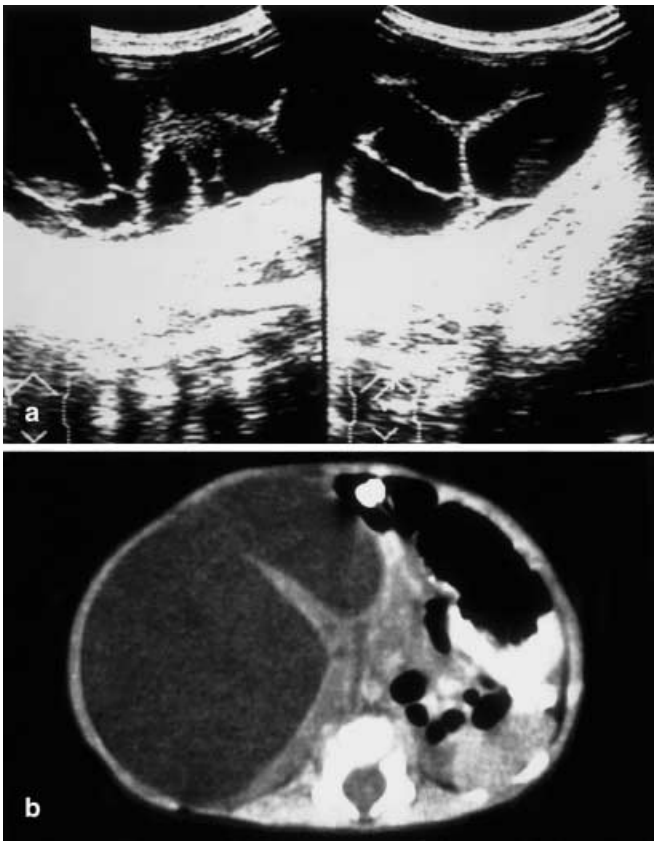

Fig. 1 **a** Longitudinal ultrasound scan of the urinoma. Multiple septa are present in the collected fluid. **b** On the computed tomographic scan, the urinoma looked like a giant single cyst, because respiration interfered with the detection of the thin septa

Although a definitive diagnosis could not be made, the cyst was drained percutaneously to relieve the vomiting caused by compression from the mass, and 250 ml of clear yellowish fluid was extracted. The renal failure gradually improved following the drainage and the patient did not require dialysis. The fluid drained contained 5 mg/dl of urea nitrogen, 4.7 mg/dl of creatinine, 120 mEq/l of sodium, 5.8 mEq/l of potassium, 0.2 g/dl of total protein, 17,852 μg/l of β_2-microglobulin, and 9.1 U/l of *N*-acetylglucosamine. The contents of the fluid were similar to urine and this provided strong evidence that the cyst was an urinoma. After drainage, a small right kidney of 4.5 cm × 2.8 cm was found on the same side as the urinoma. Dimercaptosuccinic acid scintigraphy and ultrasonography confirmed absence of the left kidney. To examine whether the urinoma and the kidney were connected, an antigrade contrast radiological examination through the drainage catheter was performed, but no connection was discovered. Voiding cystourethrography and endoscopic retrograde pyelography did not show obstructive uropathy or reflux. An open biopsy was performed at the age of 5 months; a large enough incision was made to observe the kidney directly, but there was no residual urinoma. Initially a severely dilated upper pole of a double collecting system was also suspected, but this was ruled out by direct observation and intravenous pyelography. Histological examination revealed a dysplastic kidney with characteristic primitive ducts in the medulla. The urinoma was drained continuously for 3 months, but the drainage fluid rapidly decreased, and it became impossible to detect by ultrasonography. At the age of 6 months, his urea nitrogen and serum creatinine improved to 19 mg/dl and 0.6 mg/dl, respectively. Follow-up ultrasonography has shown no evidence of recurrence.

Discussion

We report a neonate with a giant cyst with multiple septa and renal failure. Initially, it was difficult to make a precise diagnosis on the basis of radiological examinations alone. Because the contents of the fluid drained from the cyst were similar to urine, and because other cystic renal diseases such as multicystic dysplasia, polycystic kidney disease, and Wilms tumor were discounted radiologically and histologically, we were able to diagnose the giant cyst as an urinoma [5].

The cause of the urinoma is still uncertain. Obstructive uropathies are the major cause of urinoma, but they were ruled out by radiological examinations. There was no postnatal traumatic accident. His prenatal ultrasound examinations had shown no cystic lesion, except for the suspicion of the absent left kidney. Renal injuries are rare during delivery compared with neurological, musculoskeletal, and soft tissue injuries [6]. However, in our patient some traumatic factor during the delivery and the fragility of his small right kidney may have been associated with the urinoma. Parenchymal rupture during the delivery may have caused the extravasation of urine and the urinoma [7, 8]. Before the drainage he had some urine output, this was explained by the fact that some of the urine flowed into the urinoma and some into the ureter and bladder. The renal failure may have been caused by direct compression of the enlarged urinoma.

Lang and Gloriose [2] reported that over 90% of patients with urinoma due to obstructive uropathy were successfully treated by percutaneous drainage and relieving the obstruction. In trauma-induced urinomas, drainage is a reasonable first step before surgical correction. Percutaneous drainage was also an effective and safe treatment for our patient, and helped to confirm the diagnosis.

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