Fetal urinoma: a case report and review of the literature

Abstract

Fetal urinomas are a rare but important sonographic finding. Urinomas are peri-renal collections of urine, formed after the rupture of the kidney secondary to an underlying urinary tract obstruction or trauma. Diagnosis antenatally is important for ongoing monitoring and postnatal follow up as their presence may indicate reduced or absent kidney function in the affected kidney.

Keywords: fetus, obstructive uropathy, urinoma.

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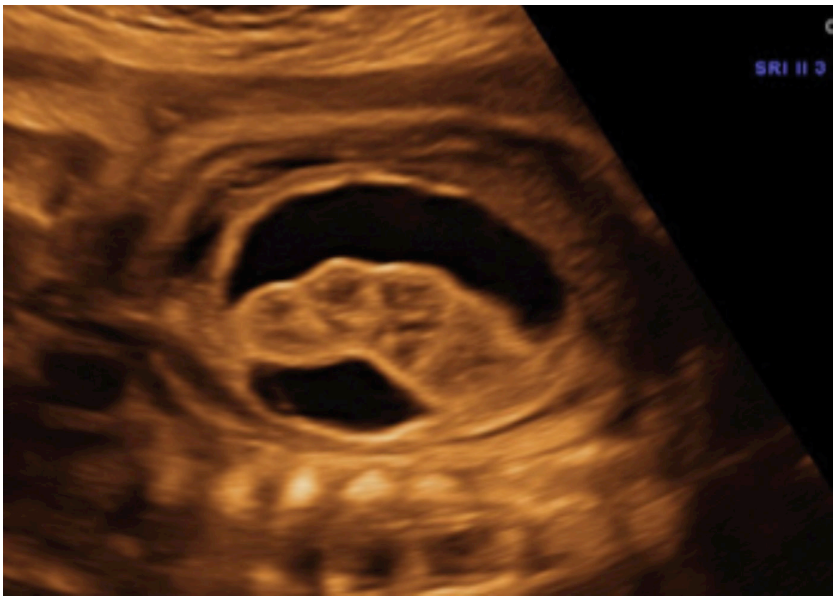

Figure 1: Coronal view of the right kidney demonstrating the typical anechoic crescent between the renal parenchyma and renal capsule.

Introduction

Urinomas are peri-renal encapsulated collections of urine.[1,2] Urinomas can be produced when urine-forming kidneys rupture, secondary to an underlying urinary tract obstruction such as an ureteropelvic junction (UPJ) obstruction or a posterior urethral valve (PUV).[2] The acronym LUTO is often used describing lower urinary tract obstruction; it refers to the collection of findings including proximal urethral obstruction, dilated fetal bladder, variable degree of hydronephrosis and calyceal dilatation. Amniotic fluid can vary from complete anhydramnios to relatively normal amount of fluid. Fetal urinomas have also been documented to be caused by trauma, such as traumatic amniocentesis.[3]

The process of urine extravasating and collecting in the perinephric space is thought to be a protective mechanism, acting as a 'pop-off valve' which is designed to protect the renal parenchyma. However, others postulate that the formation of a urinoma is secondary to the kidney having been exposed to a high-pressure system and the urinoma is evidence of the kidney's damage.[4,5]

Case report

A 43-year-old G4P3 presented to the Fetal Medicine Unit at The Canberra Hospital for assessment at 30+6 weeks with a history of pre-eclampsia in her preceding three pregnancies. Her nuchal translucency scan and fetal morphology scan had been performed at another centre and had been reported as normal. On review at 30+6 weeks, a diagnosis of moderate oligohydramnios with a right urinoma, ascites and right pleural effusion. The patient was steroid covered at this point and the ultrasound was repeated one week later, showing further enlargement of the urinoma with new development of right hydronephrosis. An uncomplicated caesarean section was performed at 32 weeks gestation. Postnatal investigations confirmed the diagnosis of posterior urethral valves and normal renal function. Catheterisation was followed by

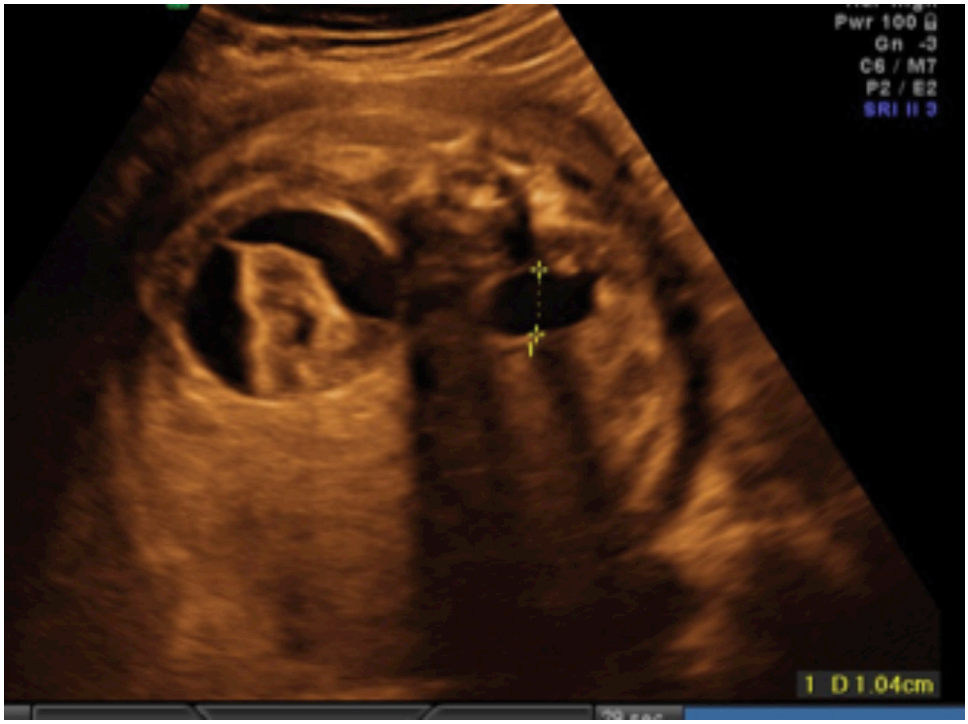

Figure 2: Transverse view of both kidneys demonstrating the right urinoma and a dilated left renal pelvis.

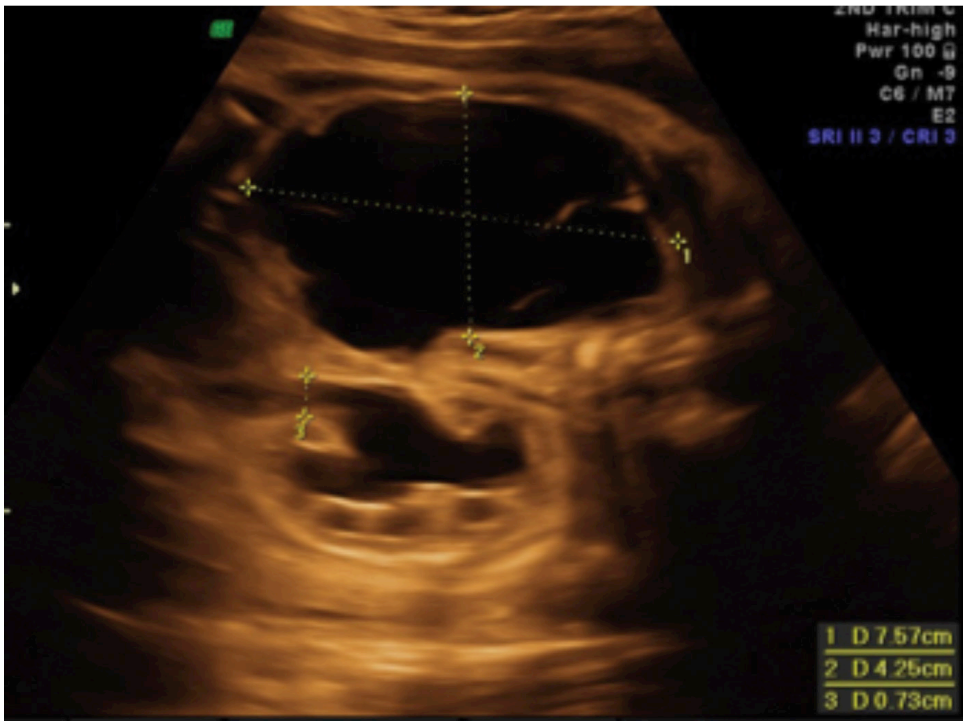

Figure 3: Coronal view of both kidneys demonstrating the right urinoma and dilated left collecting system (proximal ureter 7 mm).

cystoscopy and resection of posterior urethral valves at 10 days of age (Figures 1–3).

Discussion

A fetal urinoma is a rare but important finding.[3] Diagnosis is primarily by prenatal ultrasound but further information can sometimes be elicited by magnetic resonance imaging. The sonographic appearance of an urinoma is a featureless ellipsoid or crescent-shaped cystic mass adjacent to the kidney and spine. Large urinomas can be difficult to image as they can distort and displace the kidney, with the direction of renal displacement indicating whether the urinoma is in the anterior or posterior paranephric space.[4] Furthermore, small urinomas can also be difficult to diagnose as they may mimic a dilated calyx in the setting of hydronephosis.

Differential diagnoses of a cystic mass located between the kidney and spine includes urinoma, lymphangioma, haemorrhagic neuroblastoma, mesenteric cyst, enteric duplication, multicystic kidney disease, polycystic kidney diseas and ureteric duplication.[2] On serial sonography, urinomas have been noted to disappear spontaneously, however drainage may be necessary in cases where there is compression of surrounding structures.

Gorincour, *et al.* found that alterations in size of the urinoma, the use of in-utero puncture and the existence of normal or hyperechoic renal parenchyma appear to have no influence on the prognosis of ongoing kidney function.[4]

The finding of fetal urinoma is important for ongoing postnatal follow up. Urinomas are often associated with minimal or no function in the affected kidney.[6] Massicot, *et al.* found in two cases of fetal urinomas diagnosed on ultrasound that there was poor renal function.[2] Oktar, *et al*. reviewed 10 cases of fetal urinomas. Of the ten, one family chose to terminate in a case with bilateral urinomas and anhydramnios, while five neonates died in the early postnatal period. Of the remaining four surviving neonates, all affected kidneys were found to be non-functioning with one requiring nephrectomy[2]. Adorisio, *et al*. found that the preservation of renal function was lower in those diagnosed with urinoma prenatally, and was worse in those with lower urinary tract obstruction compared to an upper urinary tract obstruction.[7]

Conclusion

Ultrasound is a useful tool to diagnose prenatal urinomas on fetal ultrasonography. Urinomas are a rare but significant finding that is indicative of damage to the kidney following downstream obstruction that often results in poor or no function of the affected kidney.

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