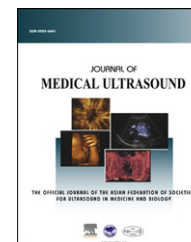


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## LETTER TO THE EDITOR

# Perinatal Magnetic Resonance Imaging Demonstration of Duplication of the Right Renal Collecting System with Ipsilateral Hydronephrosis and Hydroureter, and Contralateral Renal Hypoplasia

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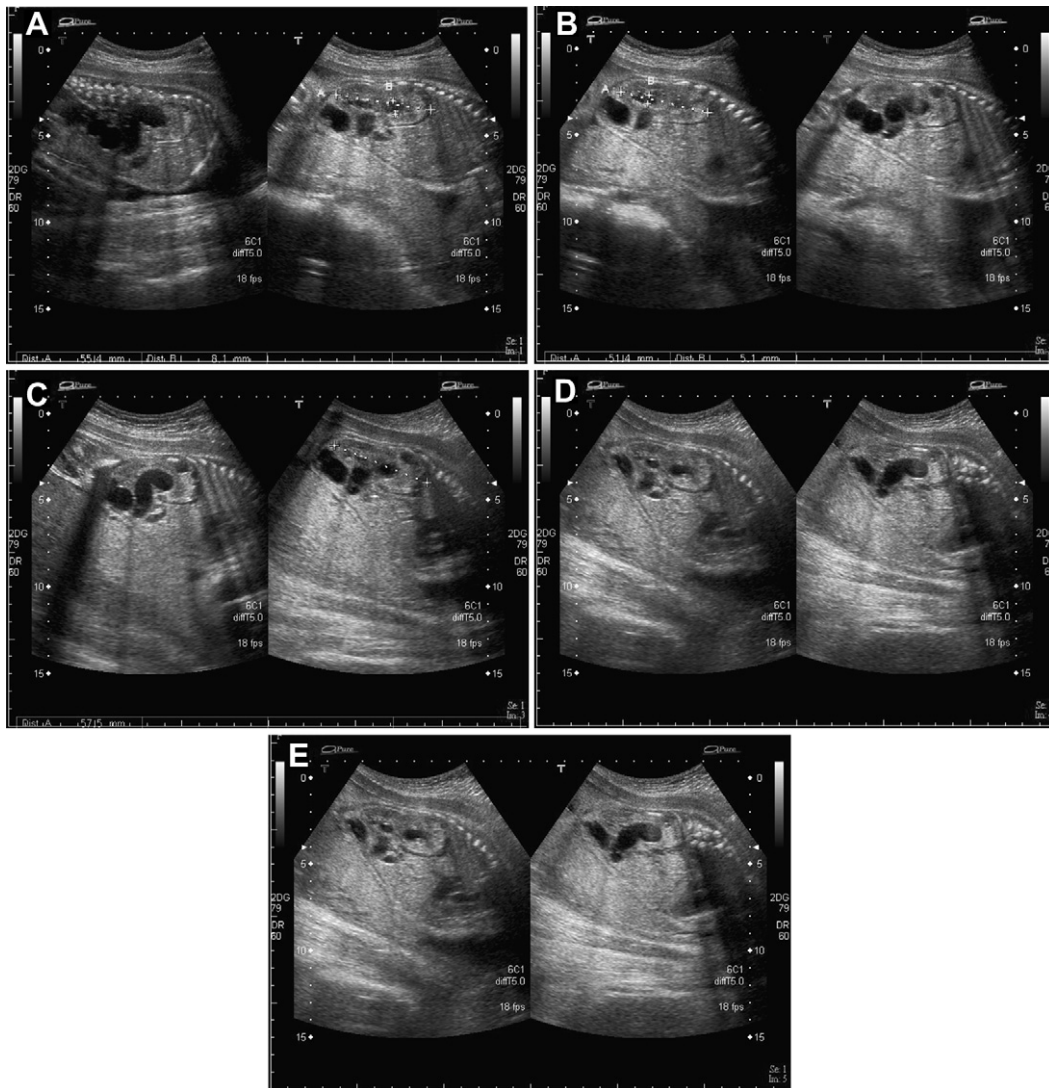
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A 36-year-old, gravida 2, para 1, woman was referred at 27 weeks of gestation because of multiple renal cysts on the right side and hypoplasia of the kidney on the left side in the fetus. The parents were non-consanguineous, and there was no family history of polycystic kidneys and renal abnormalities. The patient had undergone amniocentesis which revealed a karyotype of 46,XX. Detailed ultrasound showed a normal amount of amniotic fluid, a singleton fetus with fetal biometry consistent with the gestational age, a duplex right kidney with hydronephrosis and a right

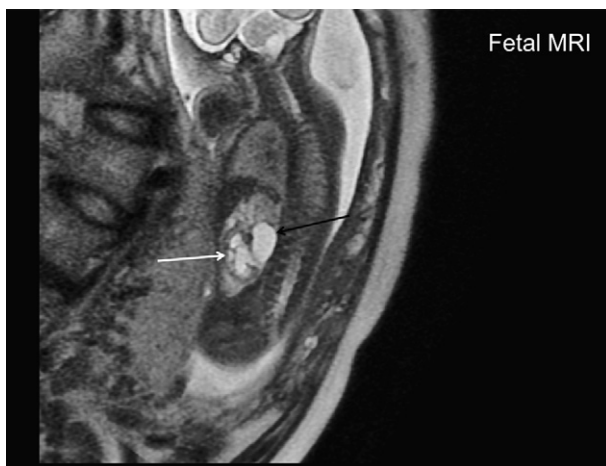
megaureter (Fig. 1). The left renal system was hypoplastic. Prenatal magnetic resonance imaging (MRI) showed a right-sided duplex collecting system with a megaureter and hydronephrosis arising from the upper pole moiety and an inferiorly compressed lower pole moiety (Figs. 2 and 3). At 38 weeks of gestation, the woman delivered a female baby weighing 3048 g with Apgar scores of 9 and 10 at 1 minute and 5 minutes, respectively. The postnatal MRI findings were consistent with the prenatal diagnosis (Figs. 4 and 5). The baby underwent an exploratory laparotomy, which confirmed a duplex right kidney and ureter with hydronephrosis and hydroureter arising from the upper pole moiety. Ureteroplasty and reimplantation of the ureter were successfully performed. The child was doing well at the age of 4 months.

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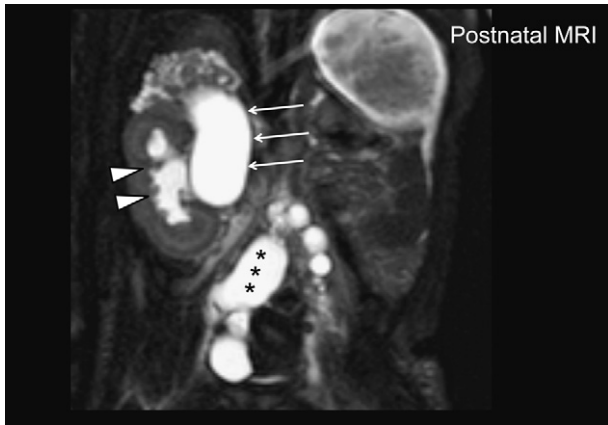
**Fig. 1** (A)–(E) Prenatal ultrasound imaging findings at 27 weeks of gestation show a duplex right renal system with the upper kidney having two cysts, hydronephrosis and a tortuous ureter, and the lower kidney having mild hydronephrosis.



**Fig. 2** Fetal magnetic resonance imaging (MRI) at 27 weeks of gestation shows that the upper pole moiety of the duplex right renal system has dilation of the renal pelvis (black arrow), and the lower pole moiety is compressed inferiorly (white arrow).



**Fig. 3** Fetal MRI at 27 weeks of gestation shows the upper pole moiety of the duplex right renal system with dilation of the renal pelvis (black arrow) and marked dilation and tortuosity of the right ureter (white arrows).



**Fig. 4** Postnatal MRI shows the upper pole moiety of the duplex right renal system with dilation of the renal pelvis (white arrows), the inferiorly compressed lower pole moiety (white arrowheads) and marked dilation and tortuosity of the right ureter (asterisks).



**Fig. 5** Postnatal MRI shows marked dilation and tortuosity of the right ureter. UB = urinary bladder.

Duplication of the renal collecting system is the most common anomaly of the upper urinary tract and has been reported as often as 0.5–0.8% for patients, with a male:female ratio of 1:2 [1–4]. Unilateral duplication occurs six times more often than bilateral duplication, with the left side being equal to the right side [3]. Incomplete duplex renal systems may be associated with lower pole pelvi-ureteric junction obstruction and hydronephrosis [4,5].

We have presented a very rare occurrence of a duplex right renal system, with ipsilateral hydronephrosis and hydro-ureter, and hypoplasia of the left kidney. Duplex renal systems can be diagnosed *in utero* by prenatal ultrasound during the second half of pregnancy, in the presence of two or more of the following signs: (1) hydronephrosis limited to one pole in a kidney with two separate, non-communicating renal pelvises; (2) ipsilateral megaureter; and (3) ipsilateral ureterocele [6]. Chen et al [7] previously reported prenatal evaluation of a giant blind ectopic ureter associated with a duplex renal system by MRI. Prenatal ultrasound is the first choice for prenatal investigation of fetal urinary tract abnormalities. Fetal MRI additionally provides excellent anatomic details and soft-tissue contrast, with multiple reconstruction planes and a large field of view, and thus allows clinicians to define the structural anomalies of the urinary tract and to facilitate evaluation and counseling for management.

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