Poster 4460

Horseshoe Kidney
- Ultrasound findings and difficulties in diagnosis

Wang YY, Lee SL, Tan WC, Yong TT

Department of Obstetrics and Gynaecology, Singapore General Hospital, Singapore 169608, Singapore.

Singapore General Hospital

Introduction

A horseshoe kidney occurs 1 in 400 births and is more common in male fetuses. It is found in 30% of cases of Turner syndrome and in 20% of Trisomy 18 fetuses. 15% of cases are associated with syndromes, the most common is Caudal Regression syndrome. It is a sequel of fusion of the upper or lower poles of left and right kidneys between 4 to 6 weeks of fetal development, before the kidneys have migrated upward and rotated on their long axes.

Case report

Mdm P is a 25 year old Malay female, gravida 7 para 6 who was antenatally well with no pregnancy-induced hypertension (PIH) or gestational diabetes (GDM). Her Group B streptococcus status was unknown. Maternal HbSAg, HIV screen and syphilis screen were all negative. She presented late at our department at 25^{+5} weeks.
Fetal anomaly screening scan demonstrated double left renal arteries and small right kidney. No other fetal anomaly was noted.

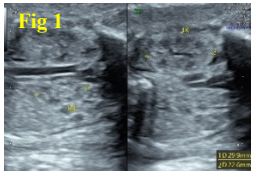


Fig. 1: Coronal section of left kidney (LK) with two renal arteries. Pelvis of RK appeared distorted, probably due to more ventrally orientation of renal pelvis.

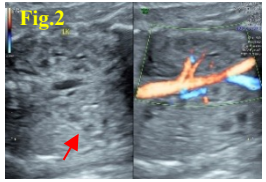
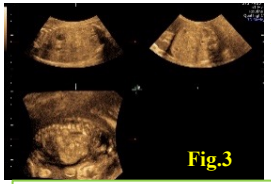


Fig. 2 : Grayscale images showing LK and smaller RK(red arrow). Colour Doppler showed a short and medially directed renal artery, confirming observation in Fig. 1

Case report

3-dimensional(3D) volumes of the renal region were collected. Mdm P defaulted subsequent follow-up scans.

Retrospectively, the 3D images revealed additional information.



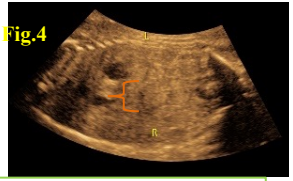


Fig. 3 & 4 : 3D multiplanar sections showing echogenic tissue similar to renal parenchyma confluent with both kidneys, anterior to descending aorta.

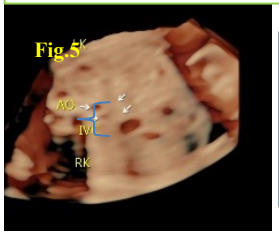


Fig 5 : HDlive mode demonstrates soft tissue confluent with both kidneys, anterior to descending aorta.

Mdm P delivered at 38^{+5} weeks via normal vaginal delivery. Baby P was large for gestational age with birthweight of 3950g (90-100th centile) and Occipito-frontal circumference (OFC) of 36cm (90-100th centile). No perinatal resuscitation was required. Postnatal examination did not record abnormal observations. Baby P was not dysmorphic and her abdomen was soft non tender with normal female genitalia.

Postnatal evaluation

Postnatal ultrasound scan showed normal echogenicity in both kidneys. Right kidney was 2.8 cm and left kidney was 4.1 cm. Lower poles of both kidneys were connected in the midline anterior to the aorta. Findings were in keeping with horseshoe kidney. There was no hydronephrosis or suspicious renal mass.

Dimercapto succinic acid (DMSA) scan confirmed that right and left moieties of the kidneys fused inferiorly, in keeping with a horseshoe kidney. Right moiety was minimally smaller than the left (right: 47%, left: 53%). The distribution of tracer activity in the kidney appeared uniform. There were no cortical defects.

Discussion

The index case highlights several learning points . The antenatal scan showed one of the kidneys to be small and the renal pelvis to be abnormal. The renal vessels were also medially orientated. Retrospectively, these findings indicated malrotation of the kidney. A 3D volume was collected, but detailed evaluation was not done due to technical reasons. Confirming a definite diagnosis may still be difficult but with a higher level of suspicion, further investigations such as adjunct imaging studies would have confirmed the diagnosis.

Conclusion

Horseshoe kidney can present with unusual orientation and may also be associated with vascular anomalies, e.g., multiple renal arteries may arise from the distal aorta or iliac arteries.