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Case Report

Congenital Unilateral Renal Agenesis: Prevalence, Prenatal Diagnosis

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Abstract: Congenital anomalies of the kidney and urinary tract are common findings on fetal ultrasound. To review the antenatal sonographic findings and postnatal follow-up of fetuses with renal agenesis and normal amniotic fluid volume. Prenatal ultrasonography seems to be highly reliable in diagnosing these anomalies. Prognosis is favorable in the absence of additional extra urinary. Malformations, We report the case of a 30-year-old woman, second gesture, on 31 weeks of pregnant; referred for the management of suspected renal agenesis unilateral ;obstetrical ultrasound showing an empty right renal pelvis, left kidney seen.

Keywords: Ultrasound, Renal agenesis, prenatal diagnosis.

INTRODUCTION

Assessment of fetal anatomy during the second trimester using ultrasound scanning has now become standard practice in most antenatal care set-ups, thus permitting the diagnosis of most structural abnormalities in the fetus(in our case, the malformation of unilateral renal agenesis only is diagnosed at 30 samein of pregnancy). Renal anomalies constitute about 20% of all congenital abnormalities [1, 2].

When a kidney is not seen in its normal location on sonography, the situation is defined as an empty renal fossa (ERF). The prevalence of ERF in fetuses has been reported as being 2.9 % [3]. The most common cause of ERF is either renal ectopia or agenesis [4].

Prenatal sonography has improved the ability to detect congenital anomalies. Severe structural fetal anomalies affect approximately 1% of pregnancies, and 20% of these involve the genitourinary system [1]. Early detection of anomalies allows for early counseling and improved parental education, the Possibility of prenatal intervention, planned deliveries, and early postnatal testing and treatment. During the sonographic examination, fetal kidneys may not be seen at their usual localization, and this finding is defined as 'empty renal fossa' (ERF). An ERF may be found unilaterally or bilaterally. In fetuses with unilateral ERF the kidneys may have not developed at all (renal agenesis) or failed to ascend normally (renal ectopia).

Early detection and the differential diagnoses of these anomalies are helpful for prenatal and postnatal management and for counseling parents.

OBSERVATION

We report the case of a 30-year-old woman with no previous pathological history, second gesture, no notion of consanguinity, referred for the management of suspected renal agenesis, on a 31 weeks of pregnant, the clinical examination found a conscious patient, hemodynamically and respiratorily stable, normal blood pressure, normal heart rate, apyretic, normal colored conjunctiva, with normal uterine height in relation to the gestational age, fetal heart beat present and regular. The vaginal touch objectifying a patient in non-laboring state.

Obstetrical ultrasound showing an evolving mono fetal pregnancy in cephalic presentation with evidence of an empty right renal pelvis, left kidney seen with minimal pyelo-caliceal dilatation, bladder seen without particularity, biometry corresponds to the 50th percentile, the amount of normal amniotic fluid (Fig).

Then the patient was seen every 2 weeks to evaluate the quantity of amniotic fluid and fetal

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evolution. At 38 weeks the patient went into labor spontaneously and delivered a newborn male APGAR 9/10, birth weight: 3200g, the newborn seen by the pediatrician; no clinically visible malformation; she is pink toned and reactive with decision performed an abdominal ultrasound; objective empty right kidney compartment, the left kidney is in its usual anatomical position, of normal size and well differentiated with minimal ureteropyeloid dilatation.

Which decision clinical and ultrasound monitoring

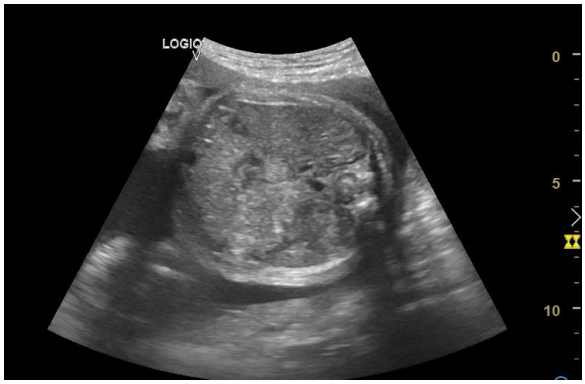
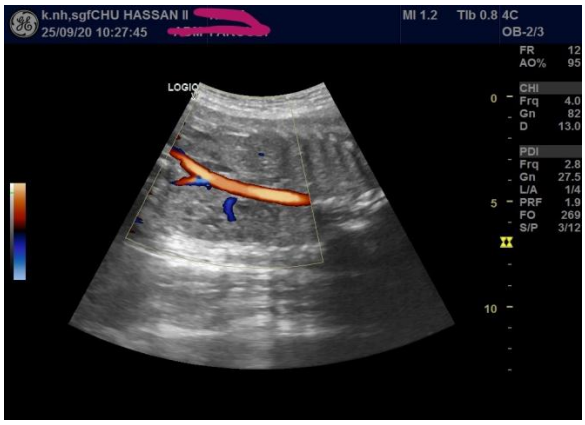


Fig-1: Axial scan at 31 weeks of gestation showing an empty renal fossa (and normal opposite kidney)



Fi-2: Demonstration abnormal renal arteries by power Doppler at 31 weeks. (presence of a lone artery)

DISCUSSION

The urogenital system develops from the mesodermal ridge (intermediatemesoderm) in the posterior wall of the abdominal cavity. During the stages of intrauterine life, three renal systems develop; namely the pronephros, mesonephros, and metanephros. The pronephros and mesonephros are transient excretory systems, and disappear without contributing to the permanent renal system. The definitive kidney becomes functional by week 12; although they do not have any major, excretory function as the placenta, works as an excretory organ until birth. Urine production starts around 10 weeks of gestation, and is the major contributor to amniotic fluid from about 14 weeks of Gestation. Renal agenesis may be ascribed to failure of the initiation of the pronephros-mesonephros sequence or of formation of the ureteric bud. Resulting in the absence of the kidney and ureter, whereas faulty 'migration' of the kidneys during early embryologic development may lead to renal ectopia.

Fetal kidneys appear as elliptical structures on longitudinal scans and have a circular appearance on transverse sections of the abdomen. They are located bilaterally adjacent to the spinal ossification centers and may be identified sonographically as early as the first trimester [5]. As the echogenity of the retroperitoneal fat tissue increases later in pregnancy, their visualization becomes consistent after 20 weeks [6]. Congenital abnormalities of the genitourinary tract, especially of the kidney and bladder, affect 3–4% of the population [7]. The fetal kidneys contribute to the amniotic fluid volume from about 14. The presence of a Structural, functional renal anomaly, or both, may result in oligohydramnios or anhydramnios, which may in turn affect pulmonary development. It is therefore necessary to establish the normalcy of the renal system as early as possible.

The primary imaging modality used to visualise the fetal urogenital tract antenatally is ultrasound. Normal kidneys along with the adrenal glands may be visible in a scan from as early as 9 weeks. See them on either side of the fetal spine just below the level of the fetal stomach. The kidneys appear echogenic in the early weeks, and gradually become hypoechoic compared with the adjacent bowel and liver. It is recommended that the kidneys be seen in axial, sagittal and coronal planes. The renal cortex appears echogenic compared with the medulla, and the renal pelvises are seen as anechoic spaces in the medial aspect in the transverse sections. In the third trimester, the pyramids can be differentiated from the cortex as it appears more hypoechoic. The kidneys grow as long as the pregnancy continues, and the size is directly proportional to the gestational age. Adrenal glands can be seen on the superior pole of the kidney. In the absence of kidneys in their normal positions in the renal fossa, the adrenals can occupy the renal fossa and mimic the renal structure. The fetal kidney should be seen in all fetuses in the anomaly scan, whereas it tends to be seen in 80% of the cases at 11 weeks and in 92% of cases at 13 weeks of gestation [8]. Many centers routinely visualize the renal arteries using color Doppler as a part of the scan These can be seen as direct branches of the abdominal aorta in a posterior coronal view, just inferior to the origin of the superior mesenteric artery. Fetal ureters are not usually visible antenatally unless they are dilated. The fetal bladder can be visualised in the pelvis from 11–12 weeks of gestation, and persistent absence of the bladder should be consider as abnormal from 15 weeks [8].

Renal agenesis is the congenital absence of kidneys, and can be bilateral or unilateral. Bilateral

renal agenesis is not compatible with life, and occurs in 0.10 .3 per 1000 births. Isolated unilateral agenesis accounts for 1 in 1000 births, and is three times more common in males [9]. (As in our case, the baby is male)

Unilateral agenesis is three to four times more common than bilateral agenesis, and carries a better prognosis. On an ultrasound examination, the fetal bladder is usually seen to fill and empty normally with normal liquor volume. The contralateral kidney may appear hypertrophied, and usually functions normally. Cho et al. [10].

The following clinical data are evaluate: diagnosis of Congenital anomalies of the kidney, date (weeks of pregnancy) of first diagnosis, prevalence of oligohydramnios (not further defined), extra renal fetal malformations, fetal interventions, duration, and complications of pregnancy.

Postnatal evaluation: in our case the baby is in the low-risk group, we divide the births according to the urgency of the surgical intervention in two parts low-risk and high-risk (Fig-1).

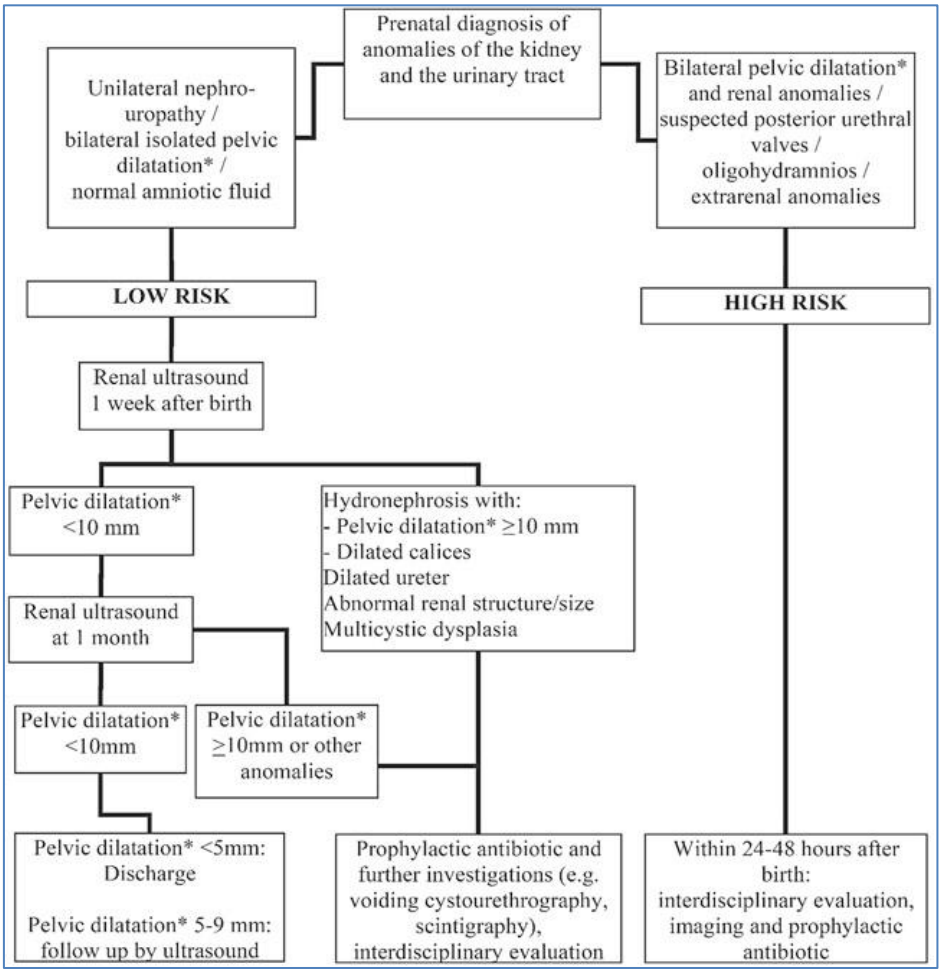


Fig-1: Risk stratification and follow-up of children with prenatal. US diagnosis of congenital anomalies of the kidney and the urinary tract

Prognosis is favorable in the absence of additional extraurinary malformations which also increases the risk for chromosomal anomalies [3].

CONCLUSIONS

When a kidney is not seen in its normal location on sonography, the situation is defined as an empty renal fossa. The prevalence of unilateral renal agenesis in fetuses has been reported as being 2.9. Prenatal ultrasonography seems to be highly reliable in diagnosing these renal anomalies, although it has its limitations in visualizing hypoplastic ectopic renal tissue and some forms of renal fusion anomalies. The fetal bladder is a critical structure in lower urinary tract to evaluate because both abnormal bladder size and absent bladder filling carry a poor prognosis. These findings may be helpful for all involved medical professionals when counselling pregnant women and parents. Close multidisciplinary collaboration between obstetricians, neonatologists, paediatricians and paediatric urologists and nephrologists, and long-term postnatal follow-up is mandatory.

REFERENCE

1. Elder, J. S. (1997). Antenatal hydronephrosis: fetal and neonatal management. Pediatric Clinics of North America, 44(5), 1299-1321.
2. Grandjean, H., Larroque, D., & Levi, S. (1999). The performance of routine ultrasonographic screening of pregnancies in the Eurofetus Study. American journal of obstetrics and gynecology, 181(2), 446-454.
3. Yuksel, A., & Batukan, C. (2004). Sonographic findings of fetuses with an empty renal fossa and normal amniotic fluid volume. Fetal diagnosis and therapy, 19(6), 525-532.
4. Hiraoka, M., Tsukahara, H., Ohshima, Y., Kasuga, K., Ishihara, Y., & Mayumi, M. (2002). Renal aplasia is the predominant cause of congenital solitary kidneys. Kidney international, 61(5), 1840-1844.
5. Bronshtein, M., Kushnir, O., Ben- Rafael, Z., Shalev, E., Nebel, L., Mashiach, S., & Shalev, J. (1990). Transvaginal sonographic measurement of fetal kidneys in the first trimester of pregnancy. Journal of Clinical Ultrasound, 18(4), 299-301.
6. Lawson, T. L., Foley, W. D., Berland, L. L., & Clark, K. E. (1981). Ultrasonic evaluation of fetal kidneys. Radiology, 138(1), 153-156.
7. Moore, K., Persaud, T. (1998). The urogenital system. In: Moore K, Persaud T, editors. The developing human: clinically oriented embryology. 6th ed. Philadelphia, PA: WB Saunders; 303.
8. Rosati, P., & Guariglia, L. (1996). Transvaginal sonographic assessment of the fetal urinary tract in early pregnancy. Ultrasound in Obstetrics and Gynecology: The Official Journal of the International Society of Ultrasound in Obstetrics and Gynecology, 7(2), 95-100.
9. Hitchcock, R., & Burge, D. M. (1994). Renal agenesis: an acquired condition?. Journal of pediatric surgery, 29(3), 454-455.
10. Cho, J. Y., Moon, M. H., Lee, Y. H., Kim, K. W., & Kim, S. H. (2009). Measurement of compensatory hyperplasia of the contralateral kidney: usefulness for differential diagnosis of fetal unilateral empty renal fossa. Ultrasound in Obstetrics and Gynecology: The Official Journal of the International Society of Ultrasound in Obstetrics and Gynecology, 34(5), 515-520.

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