

Fetal Renal Pelvis Dilatation: Prenatal and Postnatal Evaluation

Thesis

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Abstract

Endothelin-1 is involved in the pathogenesis of respiratory distress in neonates. So, the plasma level of Endothelin-1 was measured in preterm infants with respiratory distress syndrome. It was also measured in neonates with meconium aspiration syndrome and transient tachypnea of the newborn. In addition plasma ET-1 was also assayed in 15 normal preterm and 15 normal fullterm infants as a control group.

ET-1 plasma levels were assayed on the second day of life using enzyme immunoassay technique.

Plasma ET-1 concentrations were significantly higher in patients with RDS group than other groups. There was no significant statistical difference between males and females included in the study as regards plasma level of ET-1. Also, there was no significant correlation between infants delivered by normal vaginal delivery and those delivered by caesarean section as regards mean plasma level of ET-1.

The present study found that ET-1 levels in the infants who died from respiratory distress were significantly higher than the survivors.

A negative correlation between plasma ET-1 levels and each of birth weight, gestational age, Apgar scores at 1 and 5 minutes was noted. Also there was moderate positive correlation between plasma ET-1 levels and FiO₂ (and hence respiratory distress severity) required in cases that needed ventilatory support either nasal CPAP, or SIMV.

Also there was weak negative correlation between plasma ET-1 levels and PH, PO₂, HCO₃, BE and O₂ saturation. A weak positive correlation between plasma ET-1 levels and PCO₂ was observed. There was weak positive correlation between plasma ET-1 levels and Downes' score.

Our study concluded that plasma level of endothelin-1 can be used in differentiating cases of RDS from other common causes of respiratory distress in neonates.

Higher plasma ET-1 levels are indicative of the severity of neonatal respiratory distress in the early course of the disease and can be used as a predictor of poor outcome

Key words: Endothelin-1 – Respiratory Distress - Neonates.

Summary

Renal disorders are among the most common sonographically detected fetal abnormalities. Pyelectasis is one of the most common diagnoses in the prenatal period with a prevalence varying from 2%-5%.

Using transvaginal ultrasound, normal fetal kidneys can first be seen as early as 9 weeks of gestation and should always be visible by 13 weeks. With transabdominal scanning, the kidneys may first be visible at 13 to 14 weeks of gestation and are seen in most patients by 16 to 18 weeks.

Hydronephrosis detected antenatally was first reported in the early 1980s, since when there have been many case reports and studies describing the postnatal diagnosis associated with these findings.

The present study was conducted on 50 fetuses who suffered from antenatally diagnosed renal pelvis dilatation with ultrasound done during the third trimester. The cut off value for diagnosing fetal renal pelvis dilatation during the third trimester is a fetal renal pelvis anteroposterior diameter of ≥ 7 mm. They were followed postnatally both by ultrasonography and renal function testing in the form of serum urea and creatinine within the first month of life.

The present study found that 70% of the cases diagnosed as antenatal renal pelvis dilatation were males and 30% were females. Unilateral renal pelvis dilatation represented 68% of cases, while 32% of cases were bilateral.

Most of cases of antenatal renal pelvis dilatation were of mild degree. Idiopathic cases represented 74%, while 26% of cases were due to urinary tract anomaly.

Most of cases (70%) resolved spontaneously, as detected in ultrasound done during the first month after birth. 20% of cases showed either an incomplete resolution or a stationary course that required follow up with or without antibiotic prophylaxis against urinary tract infection. Only 10 % of cases needed surgical intervention.

There is no significant difference between mild, moderate, and severe degrees of fetal renal pelvis dilatation as regards the mean serum urea and creatinine levels of these neonates.

The mean serum urea level is related to the outcome of the disease being higher in cases that required surgery than those that resolved spontaneously or followed up with or without antibiotics. However there is no significant difference in mean creatinine levels between the different outcomes of the disease.

The degree of renal pelvis dilatation is related to the etiology of the disease. Severe cases occurred only in anomalous urinary tract. Most idiopathic cases were mild.

There is significant difference between different grades of renal pelvis dilatation in relation to the outcome of the disease. Spontaneous resolution occurred in almost 96% of mild cases, while none of severe cases showed this spontaneous resolution. However, surgery was indicated in half of the severe cases and none of the mild cases.