Antepartum Course and Postpartum Management of Cases With Mild Fetal Pyelectasis at Second Trimester

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Abstract

Background: Mild fetal pyelectasis is the most frequent finding during antenatal ultrasonographic monitoring of the urogenital system. We aimed to find out the natural history of mild fetal pyelectasis detected at second trimester, and its implications on the postnatal pathologies of urinary system.

Methods: Antenatal fetal pyelectasis was detected in 46 of the 2470 pregnancies (1.9%). Pyelectasis was bilateral in 14 cases. Fetal pyelectasis normalized antenatally in 14 fetuses (30%) whereas pyelectasis could be identified at birth in 32. Pyelectasis normalized in 3 of 32 babies within 1 week after delivery. During the followup of the remaining 29 babies for at least 4 months; normalization, VUR, obstructive uropathy were detected in 10, 4 and 5 babies respectively. Ten babies are being followed expectantly by the Department of Urology.

Results: We reviewed the charts of pregnant women who delivered at our department during the last three years. Cases in whom fetal anteroposterior renal pelvic diameter exceeded 5 mm during 18th to 28th gestational weeks, and who were followed for at least 4 months after delivery were included in the study.

Conclusion: Prenatal detection of fetal pyelectasis provides the probability of timely treatment to prevent progressive renal functional deterioration. Fetuses with pyelectasis must be monitored closely during pre and postnatal period. Postnatal management is very flexible, and experienced Pediatric Urologists should be involved.

Keywords: Fetal pyelectasis, hydronephrosis, urogenital system, congenital anomaly.

İkinci trimester hafif fetal pyelektazi olgularında antepartum seyir ve postpartum yönetim

Amaç: Gebelikte hafif derece fetal pyelektazi en sık raporlanan ürogenital sistem ultrasonografi bulgusudur. Çalışmamızdaki amaç 2. trimesterde tespit edilen hafif derecede pyelektazinin seyri ve postnatal dönemde saptanan üriner sistem patolojilerinin ilişkisini göstermektir.

Yöntem: Kliniğimizde son 3 yılda doğum yapmış bayanların dosyaları tarandı. Onsekiz ve yirmisekizinci gebelik haftaları arasında fetal anteroposterior renal pelvik çapın 5 mm'yi geçtiği ve doğum sonrasında en az 4 ay takip edilen olgular çalışmaya alındı.

Bulgular: Antenatal takibi yapılan 2470 gebenin 46'sında fetal pyelektazi saptandı (%1.9). Ondört olguda pyelektazi bilateraldi. Bu fetusların 14'ünde (%30) antenatal dönemde normalleşme saptanırken, 32'sinde doğumda pyelektazi mevcuttu. Bu 32 bebeğin 3'ünde doğum sonrası ilk hafta içinde pyelektazide normalleşme saptanırken, diğerleri Ürolojik takibe alındı. En az 4 aylık takipte 10 olguda normalleşme, 4 olguda veziko üreteral reflü ve 5 olguda da obstruktif üropati saptandı. On bebek halen Üroloji Servisi tarafından takip edilmektedir.

Sonuç: Pyelektazinin prenatal tanısı, ilerleyici renal hasarı önlemek için erken tedavi olanağını sağlar. Pyelektazi saptanan fetusların doğum öncesi ve sonrası dönemde yakın takip edilmesi gereklidir. Postnatal yönetim çok esnektir ve bu konuda deneyimli Pediyatrik Ürologların rol alması gereklidir.

Anahtar Sözcükler: Ultrasonografi, fetal pyelektazi, hidronefroz, ürogenital sistem, konjenital anomali.

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Introduction

Congenital urogenital system anomalies are commonly encountered during antenatal period and mild fetal pyelectasis is the most commonly detected pathological ultrasound finding during pregnancy.[1,2] Mild fetal pyelectasis or minimal hydronephrosis is defined when the anteroposterior diameter of the renal pelvis is between 5-10 mm and the reported incidence varies between 1.1-3.3%.[3-5] The importance of pyelectasis arises from its association with fetal aneuploidies and its relation to the urogenital anomalies developed later in pregnancy.[6] Fetal pyelectasis is highly associated with urogenital anomalies, however, there is no correlation between urogenital pathologies and the magnitude of the dilatation of the renal pelvis.

The aim of this study was to show the relationship between the course of mild fetal pyelectasis and postnatally detected urinary system anomalies.

Methods

In this study, 46 cases in which fetal pyelectasis more than 5 mm was detected on prenatal ultrasound between 18 and 28 weeks of gestation during the last three years were evaluated retrospectively. All cases delivered in our department and had a postnatal follow up period of more than 4 months. Cases with associated fetal structural or chromosomal abnormalities were excluded from the study. Pregnant women with normal amniotic fluid who had unilateral or bilateral mild fetal pyelectasis detected on at least one examination were included in the study.

In all neonates, the first ultrasonografic examination was performed during the period between day 3 and day 7 after the delivery. The second ultrasonography was performed one month after the delivery and the third three months. The first examination was performed in order to detect the neonates in whom urgent surgical intervention was required. The results of the second control and the third one performed not more than 3 months after the delivery in persistent cases demonstrated the course of the pyelectasis and were compared with prenatal findings. In addition, the cases with pyelectasis at delivery underwent a voiding cystoureterography at urology depertment.

Prenatal examinations were performed at intervals of 4 weeks. The course of the pyelectasis at antenatal period were divided to three groups depending on the anteroposterior diameter of the pelvis renalis:

- Not change
- The anteroposterior diameter exceeding 10 mm: worsening
- The anteroposterior diameter decreasing to < 5 mm: improving

Results

During the last three years, 2470 pregnancies were followed in our unit and in 46 cases (%1.9), fetal pyelectasis was diagnosed antenatally. Fetal pyelectasis was bilateral in 14 cases (%30.4). Fetal pyelectasis was not observed in 14 pregnancies during subsequent prenatal ultrasound examinations. During antenatal follow-up, the anteroposterior diameter of the renal pelvis was stable in 27 cases, whereas it was increasing in five cases during follow-up ultrasound examination. Pyelectasis was diagnosed in 1.2 % (32 cases) of the babies at birth. In five cases out of these 32 babies (15.6%), percutan nephrosthomy was necessary due to obstructive uropathy during the first four months of the postnatal follow-up. Pyelectasis was persisted in 29 cases after the first month of the life and in four of them (13.8 %, 8.7% of the all antenatally diagnosed pyelectasis), vesi-

Table 1. Demographic characteristics.

	Fetal pyelectasis (n = 46)
Maternal age (year)	28.6 ± 5.5
Gravidity	1.52 ± 0.56
Fetal weight at delivery (g)	3295.48 ± 514.42
Gestational age at ultrasound date	22 ± 2.8
Multiple pregnancy	2 (%4.3)

coureteral reflux (VUR) was diagnosed, therefore, further therapy and follow-up were planned at the urology department. Anteroposterior diameter of the renal pelvis was increasing in five babies and surgical intervention was necessary in three of them, whereas surgical treatment was needed in two cases out of 27 babies with stable anteroposterior diameter of the renal pelvis. There were statistically significant difference between two groups (p=0.003). The course of pyelectasis after the birth was presented in Figure 1 and demographic characteristics was summarized in Table 1.

Discussion

Mild pyelectasis is considered as a clinically insignificant physiologic condition in some studies. However, up-to-date studies stress its relationship with irreversible renal deterioration if remains uncorrected.

If fetal pyelectasis is ignored, diagnosis of a rare but curable pathology may be misssed, and treatment of possible deterioration is delayed. On the other hand, overzealous management is costly, and causes anxiety. Physiologic pyelectasis resulting from maternal hydration and hormonal alteration due to pregnancy is more frequent than pathologic pyelectasis.[7]

Mild pyelectasis is one of the most frequent findings of 2nd and 3rd trimester. Ultrasound investigations, fetuses with this diagnosis need close perinatal followup. However, clinical significance of this condition has not been fully determined yet. Studies show that pyelectasis diagnosed during 2nd trimester mostly regresses prenatally or within the first year of life. A sin-

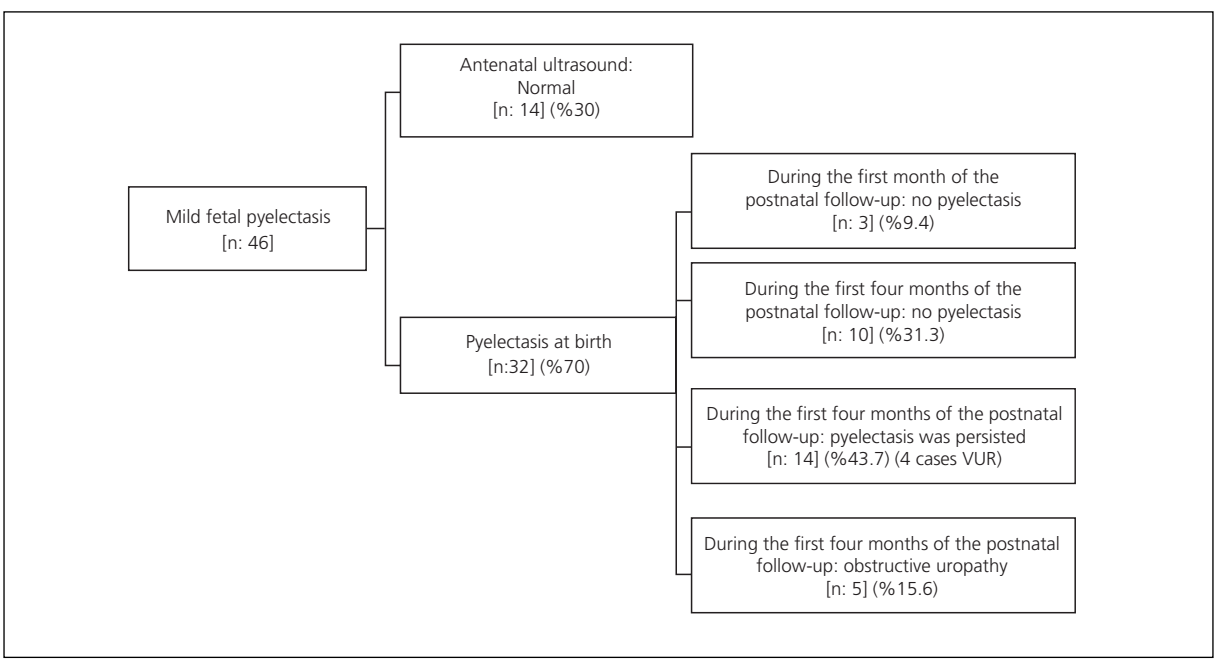

Figure 1. Pyelectasis follow-up.

gle fetal renal ultrasound evaluation might have detected a physiologic pyelectasis.[8] As a matter of fact, many studies have shown that mild pyelectasis mostly regresses spontaneously. Sairam et al found that mild pyelectasis resolves at a rate of 80%.[9] Persutte el al reported similar findings.[10] In our series, there was no sign of urinary obstruction in 71.9% of the cases who had persistent pyelectasis for 4 months postnatally. In a recent study by Woodward and Frank postnatal diagnoses of cases with antenatally detected hydronephrosis were as follows: temporary hydronephrosis in 48%, physiologic hydronephrosis in 15%, ureteropelvic stenosis in 11%, vesicoureteric reflux in 9%, megaureter in 4%, multicystic dysplastic kidney in 2% and ureterocele in 2%.[11] In our series, urinary obstruction was found in 10% of all cases, and they were managed by the Department of Urology; first by placing percutaneous nephrostomy and then by performing surgery, thereby preventing a possible upper tract deteroration at an early stage. Those with VUR were also treated appropriately. All of those in whom surgery was indicated were the ones with progressive fetal hydronephrosis. Furthermore, these patients showed progressive dilatation after birth as well. Three of them had AP renal pelvic diameter of more than 10 mm. Surgery indication was significantly less frequent in cases with no progressive dilatation. Kent et al found that all patients eventually requiring surgery had pelvic diameters more than 7 mm and this was increased at the next ultrasound evaluation.

All these studies suggest that detection of prenatal pyelectasis is important. Since patients with hydronephrosis are often asymptomatic, diagnosis and corrective surgery might be delayed. Therefore, perinatologists would have a significant impact on the protection of renal function in these cases.

Despite the fact that importance of the diagnosis of prenatal hydronephrosis is well perceived, some points in the management of mild hydronephrosis need more clarification:

• Is prenatal evaluation of pyelectasis capable of prognosticating the postnatal outcome?

• Is there any relationship between the first and following renal pelvic diameters?

• How many prenatal exams are required and what is the best scheme for prenatal followup?

Conclucion

As a conclusion, prenatal followup of renal pelvic diameter may help prognosticate the postnatal outcome,[12] and may provide the chance for a timely surgery that prevents the progressive renal deterioration. Fetuses with pyelectasis should be closely followed pre- and postnatally. Yet, it appears that the course of dilatation is more important than its existence alone. Postnatal management is very flexible and case-oriented, and all the affected cases must be referred to Pediatric Urologists.

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