Analysis of Non-Immune Hydrops Fetalis: Evaluation of 15 Cases

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OBJECTIVES: To evaluation the ultrasound characteristics, etiological factors and perinatal outcome in hydrops fetalis.

STUDY DESIGN: A total of 15 hydrops fetalis presented in our perinatology unit, were studied prospectively.

RESULTS: The etiology of non-immune hydrops fetalis (NIHF) consisted, 7% (1/15) of thoracic-lung disease, 7% (1/15) of chromosomal abnormality. In 86% of the cases no definitive etiological factor was determined. Outcomes of 15 NIHF pregnancies were termination of pregnancy in 4 cases, intrauterine and neonatal exitus in 1 and 9 case respectively and 1 healthy baby. The perinatal mortality rate of the present study group was 67%.

CONCLUSIONS: Non-immune hydrops of newborn infant is associated with a high mortality rate and requires complex diagnostic and therapeutic procedures. Detailed ultrasound examination, fetal karyotyping, investigations for fetal infections and genetic diseases should be performed for all NIHF cases with a multidisciplinary approach.

Key Words: Non-immune hydrops fetalis, Perinatal mortality

Gynecol Obstet Rebrod Med 2012;18:131-133
(1/15) of chromosomal abnormality (tetraploidy). In 86% of the cases no etiological factor was determined. The perinatal mortality rate of the present study group was 67%. Outcomes of 15 NIHF pregnancies were termination of pregnancy in 4 cases, intrauterine and neonatal exitus in 1 and 9 cases respectively and 1 healthy baby.

Table 1: The clinical characteristics and outcome of cases with non-immune hydrops fetalis (NIHF).

| Age (years) | 28±6.45 (20-40) |
| Parity (%) | 1±1.54 (0-5) |
| GA at admission (weeks) | 24±6.80 (13-36) |
| GA at delivery (weeks) | 30±5.68 (18-37) |
| Neonatal weight | 2285±1269.13 (250-3910) |
| Chromosomal finding | 1 (1/15) tetraploidy |
| Additional fetal anomaly | CAM |
| Prognosis (%) | Termination 26 |
| | Death 67 |
| | Alive 7 |

**GA:** Gestational age  **CAM:** cystic adenomatoid malformation

**Discussion**

The etiology of NIHF includes vascular (20%), chromosomal (16%), hematological (10%), and placental (8%) causes, as well as an idiopathic cause. Maternal causes are rare and are mostly infection or diabetes mellitus (DM). When our cases were evaluated, a tetraploid chromosomal disease and a cystic adenomatoid malformation (CAM) was identified as the cause of NIHF. Other chromosomal results were negative in 5 cases. In the published studies, the most common findings among the many factors under 24 weeks of gestation were chromosomal disorders. In the present study, in the 10 of 15 cases were upper of 24 weeks of gestation. However, we couldn’t analyse fetal karyotyping in all cases, therefore the diagnosis of chromosomal disease was found only in one case. In one case CAM was diagnosed prenatally. However, the additional processing to investigate the cause of NIHF could not be able to do because of the fetal death in the postpartum period despite to the intensive resuscitation. Maternal anemia was detected in 36 weeks of gestation in one of 15 fetuses who survived only till birth and also in the postpartum period. In this case, the mother’s hemoglobin electrophoresis, TORCH infection parameters and the fetal hemoglobin were found to be normal. Baby is still alive and healthy. In 13 of 15 cases, the precise cause of NIHF could not be ascertained because of the family had not requested an autopsy.

NIHF is the end result of one or more abnormalities: obstructed lymphatic drainage in the thoracic and abdominal cavities (eg, congenital anomaly, neoplasm); increased capillary permeability (eg, infection); increased venous pressure due to myocardial failure or obstructed venous return to the heart; or reduction in osmotic pressure (eg, liver disease, nephropathy, non-immune mediated anemia). The most common chromosomal cause of NIHF is monosomy X, which accounts for 42 to 67 percent of cases. Other aneuploidies associated with hydrops are Trisomy 21 (23 to 30 percent of cases), other forms of aneuploidy including Trisomy 13,18, and 12 (10 percent of cases), tetraploidy and triploidy, and rare deletions and duplications. Thoracic abnormalities account for up to 10 percent of hydrops. These lesions including CAM increase intrathoracic pressure and can obstruct venous return to the heart, leading to peripheral venous congestion, or they may obstruct the lymphatic duct, resulting in lymphedema. Interference with fluid exchange between the lung and amniotic cavity may also contribute to polyhydramnios.

In conclusion, non-immune hydrops fetalis is associated with a high mortality rate and requires complex diagnostic and therapeutic procedures. Detailed ultrasound examination, fetal karyotyping, investigations for fetal infections and genetic diseases should be performed for all NIHF cases with a multidisciplinary approach.

**Non - İmmün Hidrops Fetalis Analizi:**

15 Olgunun Değerlendirilmesi

**AMAÇ:** Hidrops fetalis olan olgularda ultrasonografik karakteristik özellikleri, etyolojik faktörleri ve perinatal sonuçları değerlendirir

**GEREÇ VE YÖNTEM:** Toplam 15 hidrops fetalis olgusunun perinataloji ünitesinde prospektif olarak değerlendirildi.

**BULGULAR:** Non-immün hidrops fetalis etyolojisinde %7 (1/15) torasik-akciğer hastalığı, %7 (1/15) kromozomal hastalık tespit edildi. Vakaların % 86’sında kesin etyolojik faktör belirlenmedi. Toplam 15 NIHF sonuclarına bakılığında 4 gebelik termine, 1 intrauterin eksitus, 9 neonatal eksitus ve 1 sağlıklı bebek elde edildi. Bu çalışmada perinatal mortalite oranı %67 olarak bulundu.

**SONUÇ:** Yenidoğan non-immün hidropsu yüksek mortalite oranı ile bağlantılı olup, kompleks tanı ve terapotik prosedürler gerektir. Detaylı ultrasonografik inceleme, fetal karyotipleme, fetal infeksyonlar ve genetik hastalıklar tüm NIHF olgularında multidisipliner bir yaklaşıma arayışı mıdır.

**Anahtar Kelimeler:** Non-immün hidrops fetalis, Perinatal mortalite

**References**


