Hydrops Fetalis

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Patient History

• 16 YO G1P0, 17 weeks gestation by LMP by physician for abnormally low maternal • Referred for full fetal ultrasound evaluation AFP 18), and fetal demise.include incorrect
dates, Down syndrome • Some causes of low maternal serum AFP (trisomy 21), Edward’s syndrome (trisomy 2
17w Fetus Sagittal Body
Findings consistent with hydrops fetalis
Hydrops fetalis

• First described in 1892
• Latin for “edema of the fetus”
• Incidence of 1/1500 to 1/4000 deliveries
• Fluid collections in serous cavities
• Characterized by generalized edema and
• Peripheral edema may be significant (anasarca)
Diagnosis of Hydrops Fetalis

• Fluid accumulations must involve more than 1 site for the term “hydrops” to be used

diagnosis (isolated ascites) - can have a
better prognosis, and narrows differential • If fluid collection in only one cavity (i.e. 5
Sonographic Findings

• Subcutaneous edema (thickness 5mm)
• Pleural Effusion
• Ascites
• Pericardial Effusion
• Polyhydramnios
• Placental Thickening (more than 6 cm)
17 week fetus. All abnormal images are from our patient’s 17 week fetus.
All comparisons are
Sonographic Findings

• Subcutaneous edema (thickness 5mm)
• Pleural Effusion
• Ascites
• Pericardial Effusion
• Polyhydramnios
• Placental Thickening (more than 6 cm)
Hydropic versus Normal Fetal Scalp

Hydrops Normal
Hydrops, Scalp Edema

Cerebri

Falx
Placenta

Cranium

Skin

10
Sonographic Findings

• Subcutaneous edema (thickness 5mm)
• Pleural Effusion
• Ascites
• Pericardial Effusion
• Polyhydramnios
• Placental Thickening (more than 6 cm)
Pleural Effusion & Ascites

- Ribs
- Pleural Effusion
- Heart/Lung
- Diaphragm
- Ascites
- Abdominal Contents
- BIDMC
Abdomen Hydropic Versus Normal

Hydrops Normal
Normal

Liver

Abdominal Wall
Placenta

Spine

14

Stomach
Hydrops

Ascites

Spine

Placenta

Bowel

Abdominal Wall

BIDMC
Sonographic Findings

- Subcutaneous edema (thickness 5mm)
- Pleural Effusion
- Ascites
- Pericardial Effusion
- Polyhydramnios
• Placental Thickening (more than 6 cm)
Pericardial Effusion

Ribs

Lungs
Sonographic Findings

- Subcutaneous edema (thickness 5mm)
- Pleural Effusion
- Ascites
- Pericardial Effusion
- Polyhydramnios
• Placental Thickening (more than 6 cm)
Gross Placental Pathology

Hydropic Placenta
Normal Placenta

http://www.echt.chm.msu.edu/courseware/blockII/Pathology/Gest_14.html
Microscopic Placental Pathology
Normal Placenta

Hydropic Placenta

http://www-medlib.med.utah.edu/WebPath/PLACHTML/PLAC076.html
http://www-medlib.med.utah.edu/WebPath/PLACHTML/PLAC097.html
abnormalities: of the fetus revealed further careful sonographic analysis

1. Congenital Heart Defect
2. Cystic Hygroma
Normal versus Abnormal Hydrops Fetal Heart
Normal
Abnormal Heart

complex congenital heart disease. There is a single AV valve. Other views (not included) showed a
ngle ventricular outflow tract, consistent with
on this sagittal fetal ultrasound? Can you diagnose the abnormality?
Cystic Hygroma

Craniu

Placenta

Skin

Spine

BIDMC
Cystic Hygroma 26
Cystic Hygroma

• Incidence 1/12,000 births

venous system, causing
dilation. embryonic lymphatics to connect with the • Develops around 40d gestation
- failure of
aneuploid) have trisomy 18, 21, 13 (total
60-75% • Half have Turner’s syndrome (XO), 10-15%
• Usually associated with elevated AFP
Differential Diagnosis

the majority of cases prior to 1960s) disease/Rh isoimmunization (etiology for • Immune Hydrops - alloimmune hemolytic

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number of
• Nonimmune Hydrops - LARGE causes! Currently comprises approximately 75% of cases
Some Causes of Non-Immune Hydrops

- Hematologic - homozygous a-thalassemia
- Congenital Infections - Syphilis,

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parvovirus, CMV, HSV type I
tachyarrhythmias, bradyarrhythmias

Cardiovascular - Structural anomalies,

• Lymphatic Abnormalities
sequestration, CCAM

• Pulmonary Malformations - Pulmonary
Some Causes of Non-Immune Hydrops (cont.)

(13, 21, 18), triploidy • Chromosomal Abnormalities - Trisomies
• Neoplasms - Sacrococcygeal teratoma
• Placental Abnormalities - Chorioangioma disease, mucopolysaccharidosis •
Prenatal Evaluation of Hydrops

echo• Complete ultrasound evaluation
+/- fetal
incompatibility• Exclusion of isoimmunization - Rh
- Amniotic fluid analysis with cultures/PCR
- Chromosomal evaluation
- Maternal serology
Hydrops Fetalis

Prognosis of Non-Immune fetal death.

• 50% of all cases diagnosed in utero result in immune hydrops die.

• 50% of all live born infants with non-condition - some fetal infections (i.e. parvovirus B19) can have remission of •
Exact prognosis depends on the underlying hydrops.
Poor Prognostic Indicators

- Identification prior to 24w gestation
- Structural Malformations, esp. Cardiac
- Chromosomal Disorder
- Pleural Effusions/Pulmonary Hypoplasia
- Severe Hydrops
• Prematurity
References

Books:

Articles:

Web Sites:
Merck Manual Online - Chapters 18 & 19  
www.merck.com/pubs/mmanual

University of Minnesota - Neonatology Department Teaching Files  
www.peds.umn.edu/divisions/neonatology/tfiles/hydrops.html

Brigham & Women’s Radiology cases (BrighamRad)  
http://brighamrad.harvard.edu/cases/bwh/hcache/36.full.html

Pathology Web Sites:  
http://www.echt.chm.msu.edu/courseware/blockII/Pathology/Gest_14.html  
http://www-medlib.med.utah.edu/WebPath/PLACHTML/PLAC076.html
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