

Adrenal Hemorrhage

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08/02/2010

History

Newborn with anemia and history of perinatal distress.

Diagnosis

Adrenal Hemorrhage

Discussion

Nontraumatic hemorrhage of the adrenal gland is uncommon and usually related to stress, hemorrhagic diathesis or coagulopathy, neonatal stress, or underlying adrenal tumors. The adrenal gland has a unique blood supply; numerous small branches from the three main adrenal arteries form a subcapsular plexus and is drained by relatively few venules. Stress increases endogenous secretion of adrenocorticotrophic hormone severalfold, resulting in a marked increase in adrenal vascularity. Increased vascularity in an intrinsically vulnerable network, together with elevation of the adrenal venous pressure from venoconstriction during shock, probably leads to hemorrhage.

Adrenal hemorrhage is the most common adrenal mass in neonates. Adrenal hemorrhages may be prenatal related to a difficult labor or delivery (particularly in infants of diabetic mothers or infants who are large for their gestational age) or postnatal from asphyxia, hypoxia, septicemia, or hemorrhagic disorders. Adrenal hemorrhage is often discovered incidentally. Hemorrhage is more frequent on the right side (70% of cases). Adrenal hemorrhage has been reported in 4% of infants who are undergoing extracorporeal membrane oxygenation therapy.

At birth, the adrenal gland is quite large and weighs 5–10 g because of fetal embryogenesis and homeostasis (the normal adult adrenal gland weighs about 5 g). The adrenal gland is susceptible to hemorrhage at birth as the result of regression of the fetal cortex, which occurs rapidly during the first 6 weeks of life; the vascular channels in the primitive cortex become markedly engorged and more susceptible to hemorrhage. If the hemorrhage is significant, a palpable flank mass, anemia, prolonged jaundice, and hypovolemic shock due to blood loss may occur. Adrenal insufficiency is rare in neonates.

US is the examination of choice in neonates with suspected adrenal hematoma. Initial US typically reveals a complex, echogenic mass. If the mass is large, the kidney may be displaced inferiorly. Regression of the mass over a period of weeks is shown on serial US scans. MR imaging reveals a mass with the signal intensity characteristics of hemorrhage. Other characteristic radiologic findings include rimlike calcification (stippled calcifications are typical of neuroblastoma). Adrenal hemorrhage is sometimes focal and may only involve the medulla.

Findings

US-Large complex cystic mass involving the right adrenal gland, deforming the superior pole of the right kidney. The left adrenal gland is normal.

Reference

Kawashima A, Sandler CM, Ernst RD, Takahashi N, et al. Imaging of Nontraumatic Hemorrhage of the Adrenal Gland. *RadioGraphics* (1999); 19: 949-963.

Contributor

Linda Woolpert, RT RDMS



HELEN DEVOS CHILDREN
07/20/10 07:17:14AM LW

MI 0.8 TIs 0.2 ML6-15
Ped Abd

FR 20

CHI
- Frq 9.0
- Gn 50
- S/A 0/1
- Map F/0
D 6.0
- DR 63
AO% 100

2"



-



4"

-

-

-

-

6"



RIGHT ADRENAL

Educational Use Only
SPECTRUM HEALTH



HELEN DEVOS CHILDREN
07/20/10 07:17:40AM LW

MI 0.27 TIs 0.2

ML6-15
Ped Abd

FR 20

B
- Frq 11.0
- Gn 51
- S/A 0/1
- Map F/1
D 6.0
- DR 66
AO% 100

2-



4-



6-

LOGIQ
E9



RIGHT ADRENAL

Educational Use Only
SPECTRUM HEALTH



HELEN DEVOS CHILDREN
07/20/10 07:20:25AM LW

MI 0.8 TIs 0.4 ML6-15
Ped Abd

FR 13

CHI
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- D 6.0
- DR 63
- AO% 100

2-

-



-

4-



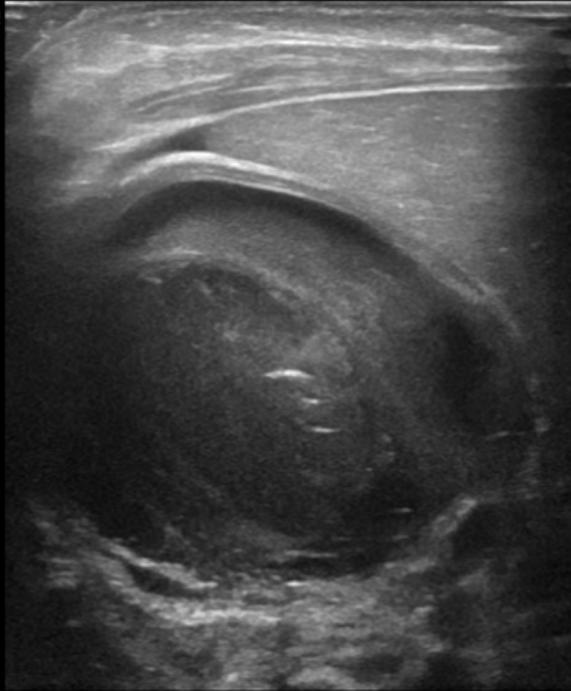
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6-

LOGIQ
E9



TRANS

RIGHT ADRENAL



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07/20/10 07:22:06AM LW

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Ped Abd

FR 21

CHI
- Frq 12.0
- Gn 46
- S/A 0/1
Map F/0
- D 5.0
DR 63
- AO% 100

LOGIQ
E9



4

LONG

RIGHT KIDNEY



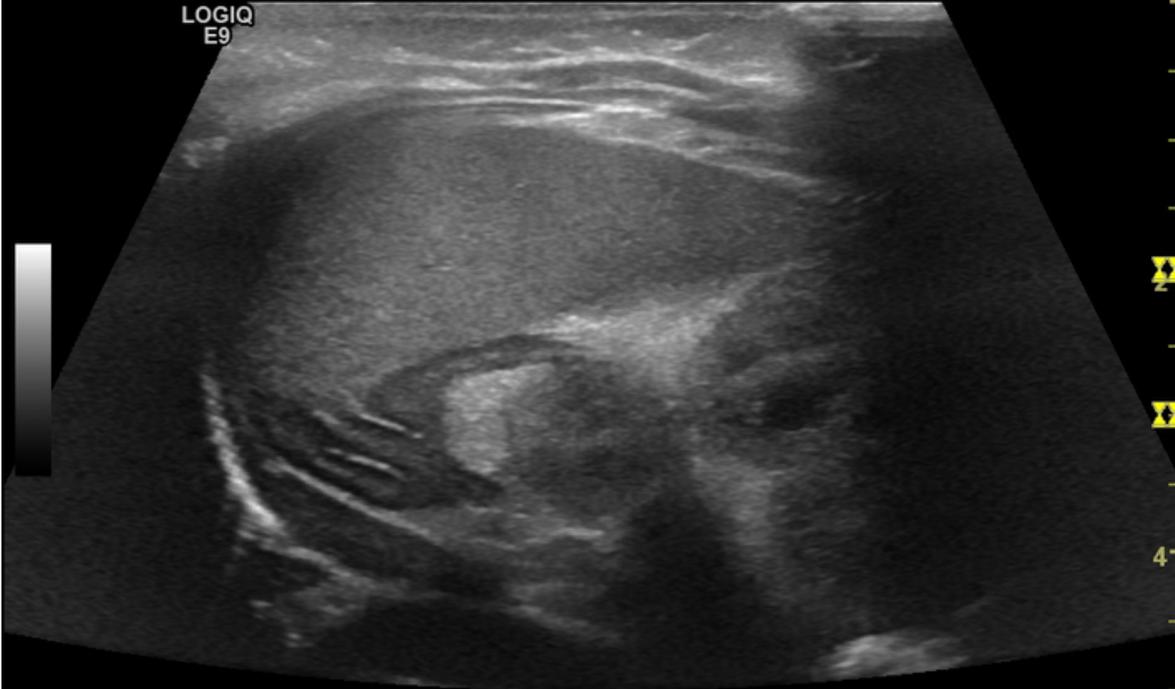
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07/20/10 07:23:58AM LW

MI 0.8 TIs 0.3 ML6-15
Ped Abd

FR 21

CHI
- Frq 12.0
- Gn 46
- S/A 0/1
- Map F/0
- D 5.0
- DR 63
- AO% 100

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LEFT ADRENAL



4

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