Case Report

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Sonographic Liver Changes Prior to Clinical Signs of Preeclampsia

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Key Words

Sonography
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Abstract

Abnormal liver findings on sonography consistent with subcapsular hematoma were seen in a patient prior to clinical and laboratory evidence of preeclampsia and hemolysis, elevated liver enzymes, and low platelet count (HELLP) syndrome.

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Introduction

Preeclampsia is defined as the occurrence during pregnancy of hypertension in combination with generalized edema or proteinuria, or both. Epigastric and right upper-quadrant pain are common symptoms in severe preeclampsia, and are due to swelling and stretching of the liver capsule as a result of edema and hemorrhage. We report the sonographic changes seen in the liver of a patient prior to the appearance of clinical signs of preeclampsia. Only one other case with similar findings has been reported [1].

Case Report

A 25-year-old gravida 2 para 1 woman presented at 29 weeks gestation with vaginal bleeding. A sonogram performed on admission revealed a posteriorly located placenta with no signs of abruption. Fetal size was consistent with her last menstrual period and no abnormality was detected. At that time blood pressure, liver function tests and platelet count were normal. On the third day of hospitalization she developed severe pain in the epigastrium and right hypochondrium, with chills, nausea and vomiting. The right upper abdomen was very tender, and a positive Murphy sign was elicited. There was no tenderness over the uterus. Temperature and blood pressure were normal at this stage and no protein was found in the urine.

The abdominal pain increased dramatically, with little response to intravenous analgesics. Abdominal sonography for evaluation of the gallbladder was performed. The sonogram showed a gallbladder of normal dimensions and no evidence of gallstones. A focal hypo-echoic area in the periphery of the liver, abutting on the gallbladder, was demonstrated (fig. 1).

Following sonography, the blood pressure was found to be 200/ 160 mm Hg, and soon thereafter 260/160 mm Hg. A diagnosis of severe preeclampsia was made. The blood pressure was lowered by intravenous administration of hydralazine with immediate decrease in abdominal pain. Liver function test was abnormal, with markedly elevated serum glutamic-oxaloacetic transaminase and serum glu-tamic-pyruvic transaminase, and mild hyperbilirubinemia. Platelet count, which was 172,000/mm³ on admission, was found to be only 54,000/mm³. An emergency cesarean section was performed and a female infant weighing 1,090 grams was delivered. Abruptio of the placenta was evident. Palpation of the gallbladder area and liver at surgery showed no abnormality. A repeat sonogram performed several weeks after delivery showed disappearance of the focal hepatic finding, with normal liver and gallbladder appearance (fig. 2).

Conclusion

Epigastric and right upper-quadrant pain are common symptoms in severe preeclampsia, and are due to swelling and stretching of the liver capsule as a result of edema and hemorrhage. The characteristic liver lesion of eclampsia seen at autopsy is hemorrhagic necrosis in the periportal areas. In some patients, the necrosis may be extensive, and when it occurs in the periphery of the liver, a subcapsular hematoma develops. Subsequent rupture of the capsule, with massive hemorrhage into the peritoneal cavity is a serious complication of preeclampsia with a high maternal and perinatal mortality [2].

In addition to the classical signs of preeclampsia, our patient exhibited features of the HELLP syndrome, with hemolysis, elevated liver enzymes and a low platelet count. In a study by Weinstein [3] on 29 patients with the HELLP syndrome, all had nausea, malaise and right Liver Sonography in Preeclampsia

upper-quadrant tenderness. Weinstein reported that at cesarean section the liver is found to have a firm

consistency, often with subcapsular hemorrhages. The patient presented is very similar to the case reported by Benacerraf et al. [1]. In their report, multiple echogenic

masses in the liver, thought to represent peri-portal necrosis and hemorrhage, were seen 24 h prior to clinical signs of preeclampsia. Interpretation of the son-ogram in our case was complicated by the close proximity of the finding to the gallbladder. The subsequent development of preeclampsia and HELLP syndrome leads us to believe that the sonographic findings are consistent with a subcapsular hematoma, not felt at surgery due to the overlying gallbladder.

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Fig. 1. Sagittal (a) and transverse (b) scans showing a focal hypoechoic area in the periphery of the liver (arrows) abutting on the gallbladder (G) wall.

Fig. 2. Normal sonogram of gallbladder and adjacent liver following delivery.