Calcified liver abscess in a newborn with portal vein thrombosis and portal cavernoma

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ABSTRACT

Liver abscess in the neonatal period is a rare but serious illness. We present a case of liver abscess in a 30 week preterm infant after necrotising enterocolitis and umblical venous catheterization. It was later complicated by early calcification of abscess and portal vein thrombosis and cavernoma formation.

Key words: *Abscess, Calcification, Liver, Neonate, Umbilical catheter*

Liver abscess in neonates is a rare entity but is associated with high morbidity and mortality. It often results from spread of infection by various routes such as hematogenous route, umbilical vein, portal vein, or direct spread from neighboring structures. Prematurity, misplacement of umbilical catheters with use of hypertonic glucose infusions and total parental nutrition and underlying immunodeficiency are common predisposing factors. High index of suspicion is important for early diagnosis and intervention. We report an unusual case of liver abscess in a premature infant which was complicated by early calcification.

A 30 weeks preterm baby at 12 days of life was referred to our hospital as a case of sepsis with cholestatic jaundice. In referring hospital, the baby had developed necrotizing enterocolitis on day 3, for which an umbilical venous catheter was placed for initial 10 days for total parenteral nutrition. At admission to our hospital, the baby had abdominal distension with hepatomegaly. Ultrasonography (USG) of abdomen was done which was suggestive of two large liver abscesses in the right lobe of liver. The baby was started on intravenous (IV) antibiotics and intervention-guided pigtail catheter was inserted for drainage of pus. Pus culture showed growth of pseudomonas aeruginosa and the baby was given IV imipenem as per culture sensitivity report, but there was no improvement and later the child developed ascites also. Fungal culture was negative. Contrast-enhanced computed tomography (CT) abdomen was done which was suggestive of two large calcified liver abscesses with splenic vein thrombosis and portal cavernosa formation and massive ascites (Figs. 1 and 2).

Low-molecular-weight heparin (LMWH) was started for splenic vein thrombosis. Laboratory investigations revealed white blood cells 12,700 cells/cumm (neutrophils -40%, lymphocytes - 50%), platelet count 3.2 lac, serum glutamic oxaloacetic transaminase 212 U/L, serum glutamate-pyruvate transaminase 118 U/L, C-reactive protein - 11.4 mg/L, serum calcium - 10.2 mg%, phosphorus - 5.8 mg%. Nitro blue tetrazolium test was done to rule out chronic granulomatous disorder and was found normal. HIV enzyme-linked immunosorbent assay of mother was found negative. The baby was given IV imipenem for 4 weeks and required repeated ascitic taps under albumin cover. The baby recovered clinically with resolution of ascites with 6 weeks of antibiotics and drainage of abscess and was discharged on subcutaneous LMWH. After 3 months of follow-up, there was complete resolution of portal vein thrombosis, but the child had persistent portal cavernoma. LMWH was given for total 3 months duration. Long-term follow-up is needed to look for the development of portal hypertension.

Liver abscess in neonates is an uncommon entity and carries a high mortality, if not diagnosed early. The signs and symptoms of liver abscess are non-specific and resemble with those of septicemia, so a high index of suspicion is required. The most common signs include fever, vomiting, lethargy, poor feeding, abdominal distension, and hepatomegaly. Identified risk factors in literature include culture-proven sepsis, umbilical lines, total parental nutrition, necrotizing enterocolitis, prematurity, and surgery. The liver abscess can be either solitary or multiple. The most common etiological agents reported include *Staphylococcus aureus*, *Streptococcus* spp., *Escherichia coli*, *Klebsiella*, *Pseudomonas*, *Anaerobes,* and *Candida* species in preterm infants. Polymicrobial infections are most common [1,2].

USG is the initial investigation of choice with a sensitivity of 80–90%. In USG, liver abscess shows areas of increased echogenicity, necrosis, and breakdown. CT scan has a high resolution and hence can be done for confirming diagnosis. In CT scan, abscess appears as low attenuation mass with contrast enhancement of rim [3,4]. Parenteral antibiotics and drainage of abscess is the mainstay of the treatment. Antibiotics should

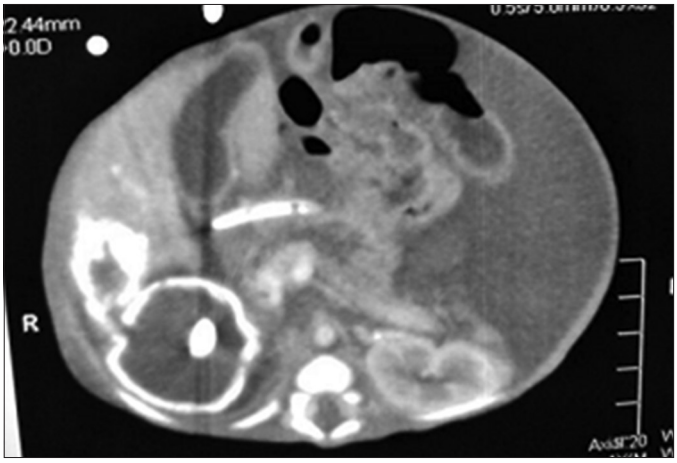

Figure 1: Axial computed tomography image suggestive of calcified liver abscess

Figure 2: Coronal computed tomography image suggestive of two calcified liver abscess with portal vein cavernoma

be given for a total duration of 3–6 weeks depending on clinical status of patient.

Portal vein thrombosis and cavernoma is rarely reported as a complication of hepatic abscess in neonates [5-7]. Our case is unusual as it was complicated by early portal cavernoma formation and subsequently hepatic calcification and confirmed on CT scan. Etiology of calcification is not clear, but it has been described as result of infection, portal vein thrombosis due to dystrophic calcification [8,9]. Prematurity, sepsis, and central parenteral nutrition with umbilical vein catheter were the risk factors in the index case. Therefore, all neonates with prematurity, severe sepsis, umbilical lines, and necrotizing enterocolitis should be screened for the early diagnosis of the disease and then subsequently will help in management planning, which in turn can be life-saving.

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