

Case report

Solitary staphylococcal liver abscess in a neonate

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Abstract:

A 28 days old neonate presented with high fever, abdominal distension, poor feeding and lethargy. Sepsis screen was positive; ultrasound and computed tomography of the abdomen demonstrated a multiloculated hepatic abscess in the right lobe of the liver. The baby was treated with intravenous antibiotics for 6 weeks and percutaneous aspiration of the abscess, resulting in excellent recovery.

Keywords: liver abscess; Staphylococcus aureus; percutaneous aspiration; empiric antibiotics

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Introduction- Neonatal liver abscess is a rare entity associated with high morbidity and mortality. The diagnosis needs a high index of suspicion because liver abscess presents with non specific signs and symptoms, which are essentially those of neonatal sepsis. Majority results from ascending haematogenous infections via portal and umbilical veins, via biliary tree or direct contiguous spread from neighbouring structures¹. Major risk factors are blood culture proven sepsis, incorrectly placed umbilical catheter and omphalitis. Minor risk factors are necrotizing enterocolitis, exchange transfusion, perinatal asphyxia, gastrochisis requiring surgery, infant of diabetic mother, ventriculo-peritoneal shunt, and neutrophil function defects. Liver abscess in neonates can be either single or multiple. Single abscess are often large, well localized, and drainable by surgical methods, have a subacute course and preceded by umbilical infections. Multiple abscesses are small in size, not drainable by surgical techniques, follow a fulminant course and are not due to umbilical infections². Most common causative organisms are Staphylococcus aureus, Streptococcus pyogenes, Escherichia coli, whereas Klebsiella, Pseudomonas, Corynebacterium acnes, anaerobes, Candida species are less commonly encountered. 50% of cases have polymicrobial etiology³.

Case report- A 28 days old male term neonate was admitted with history of high grade fever, progressive abdominal distension, lethargy, poor feeding and vomiting for past 2 days. His mother had an uneventful antenatal and intranatal periods. Normal vaginal delivery ensued with Apgar scores being 9/10 and 10/10 at 1 and 5 minutes after birth. He was exclusively breastfed and no prelacteal feeding was given.

On examination, the baby was febrile (temperature 102^o F), tachycardic (heart rate of 180/minute), tachypnoeic (respiratory rate-60/minute), and capillary refill time of 2 seconds. The neonatal reflexes were poorly elicitable. The liver was firm and palpable 6 centimeters, below the right costal margin along the right midclavicular line with a span of 9 cm. The left lobe was palpable. Spleen was palpable 2 cm below the costal margin along the splenic axis. A lump in the hypochondrium 3×4 cm, firm, smooth surface, immobile was felt separately from the liver. The sepsis screen was positive with 22% bandemia, 16 mm micro ESR in one hour. Ultrasound of the abdomen showed hepatosplenomegaly and presence of a hypochoeic lesion with inhomogenous areas in the right lobe of the liver. There was no ascites and splenoportal venous system was normal in colour doppler study. Computed tomography (CT) of the

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Fig 1- The coronal section of computed tomography of abdomen image shows the bilobed abscess (marked by block arrows), and internal septation in both the lobes of the abscess (marked by line arrow).

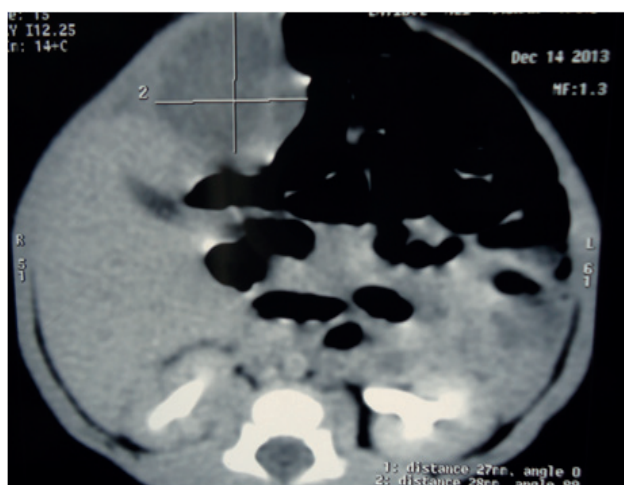


Fig.2- The computed tomography of abdomen in axial cut shows the abscess cavity in the right lobe of the liver.

abdomen revealed bilobed multiloculated lesion (47×30×28 mm) with enhancing margins involving segments IV and VIII (Fig 1,2). Common bile duct was normal in course and caliber; intrahepatic biliary radicles were not dilated. The lung bases and were pleural spaces were clear. Prothrombin time (PT) was 13.4 seconds (control 11.2 seconds), INR- 1.2, Activated partial prothrombin time (APTT) – 28 seconds (control-26 seconds). Blood culture was sterile and amoebic serology (Indirect haemagglutination assay) was negative.

Confirming the diagnosis as hepatic abscess, we started intravenous antibiotics Meropenem and Vancomycin empirically. Ultrasound guided percutaneous aspiration of 2.5 ml pus from the abscess cavity was done. The pus culture revealed *Staphylococcus*

aureus sensitive to the empiric antibiotics. Repeated ultrasound abdomen at weekly intervals showed gradual reduction in the abscess size. Fever spikes gradually reduced and the baby became afebrile by 20th day of antibiotic therapy. On day 42 of treatment ultrasound revealed few scattered calcific foci in the hepatic parenchyma, without definite evidence of residual abscess. The baby was discharged 50 days after hospital admission when he was found to have steady weight gain of 25-30 grams/ day for 7 consecutive days.

Discussion- Neonatal liver abscess is a very rare entity^{4,5}. The first case reported was in 1936, when 2 neonates with fatal peritonitis and solitary liver abscess at necropsy were reported⁶. In 2005, Tan et al reported 6 cases of neonatal liver abscess and stated that there are fewer than 100 cases in English literature from 1936 to 2005³. Since that report, additional 21 cases have been reported till 2013⁶. In January 2014, Fysal et al reported another case of neonatal liver abscess⁴. Thus only 28 cases have been reported from 2005 to January 2014. Increasing trend of this rare condition have been reported among babies admitted in neonatal intensive care units and among preterm babies⁴.

The treatment comprises of correcting the predisposing conditions (withdrawal of umbilical catheter), percutaneous drainage for solitary abscess or open drainage for multiple abscesses and or large abscess⁷. Percutaneous drainage techniques have been found to be safe and efficacious in children, but experience in neonates is limited⁸. Open surgical exploration has an advantage of possible treatment of an intra-abdominal source of infection⁸. However based on their 14 years experience Lee et al stated that neonatal liver abscess is associated with good long term outcome and minimal complications when imaging guided percutaneous guided aspiration or drainage is performed in conjunction with long term antibiotic coverage⁹. Parenteral antibiotics based on culture sensitivity pattern should be given for 6-8 weeks. In culture negative cases, broad-spectrum antibiotics covering both gram positive and negative organisms should be instituted⁷.

As an imaging modality, ultrasound has the following limitations- it is less sensitive in detecting small multiple abscess. Moreover findings on ultrasound are not diagnostic for hepatic abscess. Differential diagnosis includes hepatoblastoma, infantile haemangioma, mesenchymal hamartoma when the lesion is solitary and secondaries of neuroblastoma if lesions are multiple¹⁰. CT scan is

diagnostic, the characteristic appearance being a well circumscribed, low attenuating mass with contrast enhancing rim ¹⁰. Multiloculation is an important sign when present, as in our case.

Articles have reported fatal peritonitis ⁶, pyopericardium ¹¹, portal vein thrombosis and portal cavernoma formation ^{7,10} as complications associated

with hepatic abscess in neonates.

All previous reported cases were associated with one or more risk factors. The occurrence of liver abscess in a neonate without any identifiable risk factor, the success of percutaneous aspiration in treating the case and recovery without any complication are the remarkable features of this case.

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