

LIVER ABSCESS IN CHILDREN WITH CLINICAL PROFILE AND OUTCOME

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Abstract:

Introduction: Liver abscess (LA) is a disease in which there is involvement of involves collection of purulent material in liver parenchyma due to bacterial, parasitic, fungal or mixed infections. This is common in India and also it is 2nd highest incidence because of poor sanitation, overcrowding and inadequate nutrition. Nowadays liver abscess is growing rapidly in developing modern medicine, with the advent of many investigative procedures in diagnosis of abdominal diseases. Infection of intra abdominal abscesses and abdominal infections are main attention of the physician and to be the liver as the liver is the organ most important for the development of abscess as it is 48% of all the visceral abscesses. Liver abscess has a significant mortality rate in both developing and developed countries. It may cause complication of various intraabdominal infections; by hematogenous spread via portal vein from the gastrointestinal tract; or, may develop after traumatic injury to the liver. Common types of liver abscess are pyogenic and amoebic. In India cases of liver abscesses in children constitute more than 79 per 100,000 pediatric admissions below 12 years old. For unknown reasons male children are similar to the male adults and are affected by liver abscesses more than female children.

Aim: The main aim of this study is to evaluate the clinical profile and outcome of liver abscess (LA).

Material and methods: Total 30 patients with various age groups from 1years to 14 years of age group attending to Pediatrics department of this college were included for study. All the patients were evaluated for their complaints, possible predisposing factors, mode of diagnosis, interventions where there or not during their stay. Laboratory investigation like Microbiological analysis of the pus was done and on the basis of culture reports, changes in drug prescription as antibiotic treatment included ceftriaxone, amikacin and metronidazole in specific doses. According to the ultrasonography abdomen and the number and amount of abscess cavities intervention were done. Pre intervention liver functions like prothrombin concentration (PC), prothrombin time (PT) and international normalized ratio (INR) were also recorded.

Results: During the period of study total 30 patients were included in this study. The mean age of patients was 6.2 years and age range was 3 -12 years. Male to female ratio was 1.5:1 patients shows the clinical features as fever, abdominal pain and abdominal distension. Maximum patients showed main complain as fever by 25 patients (83.3%) followed by abdominal pain (right hypochondrium) by 20 patients (66.7%) , abdominal distension by 5 patients(16.7%), Peritonitis by 3 patients (10%) and Subacute intestinal obstruction by 2 patients (6.7%).

Conclusion: In children liver abscess is an important cause for morbidity. Liver abscess should be suspected presenting with prolonged fever and pain in upper abdomen to the emergency department. For the diagnosis of liver abscess Ultrasonography is an easy, widely available non-invasive and cost effective investigation. If timely it is not cure it may lead to rupture and mortality. High index of suspicion, early screening and appropriate intervention in form customized management may raise good results.

Keywords: Children, Liver abscess, Pyogenic liver abscess, Treatment

Introduction:

Liver abscess (LA) is a disease in which there is involvement of involves collection of purulent material in liver parenchyma due to bacterial, parasitic, fungal or mixed infections. This is common in India and also it is 2nd highest incidence because of poor sanitation, overcrowding and inadequate nutritionⁱ. Nowadays liver abscess is growing rapidly in developing modern medicine, with the advent of

many investigative procedures in diagnosis of abdominal diseases. Infection of intra abdominal abscesses and abdominal infections are main attention of the physician and to be the liver as the liver is the organ most important for the development of abscess as it is 48% of all the visceral abscessesⁱⁱ. Liver abscess has a significant mortality rate in both developing and developed countries. It may cause complication of various intraabdominal infections; by hematogenous spread via portal vein

from the gastrointestinal tract; or, may develop after traumatic injury to the liver. Common types of liver abscess are pyogenic and amoebicⁱⁱⁱ. In developing countries Amoebic liver abscess is an important caused for lesions of the liver as about 3-9% of all cases are of amoebiasis^{iv}. Amoebic liver abscess is caused by the protozoa *E. histolytica* which ascends the portal venous system. Visceral abscess and intraabdominal abscesses are the common type of Liver abscesses which showed about 48% of visceral abscesses and 13% of intraabdominal abscesses^v. In India cases of liver abscesses in children constitute more than 79 per 100,000 pediatric admissions below 12 years old^{vi}. Studied in Brazil showed that incidence LA has been reported to be approximately 1 out of 140 admissions^{vii} whereas studied in India showed there is more than 79 per 100 000 pediatric admissions^{viii}. Another studied in USA showed that an incidence of 25 per 100,000 admissions and studied in Denmark^{ix} showed incidence about 11 out of 100,00,00 admissions^x whereas 20 per 100 000 admissions in Taiwan of China^{xi}. For unknown reasons male children are similar to the male adults and are affected by liver abscesses more than female children^{xii}. Nearly about 80% of LA in children are caused by Pyogenic organisms which followed by amoebic LA which is responsible for about 21%-30% of the cases^{xiii, xiv}. The main aim of this study is to evaluate the clinical profile and outcome of liver abscess (LA).

Material and methods:

This study was conducted in the Department of Pediatrics of Prasad Institute of Medical Science and hospital . During the period of 1 year 30 pediatric patients were included in this study. All patients of liver abscess were included in this study. Total 30 patients with various age groups from 1 year to 14 years of age group attending to Pediatrics department of this college were included for study. Detail history of patients was taken as a form of recorded data from patient's parents or care taker. For each patient various physical examinations were carried out as well as various lab examinations. All the patients were evaluated for their complaints, possible predisposing factors, mode of diagnosis, interventions where there or not during their stay. Laboratory investigation like Microbiological analysis of the pus was done and on the basis of culture reports, changes in drug prescription as antibiotic treatment included ceftriaxone, amikacin and metronidazole in specific doses. ultrasonography

(USG) abdomen were also done for all the patients. In the case of single cavity of 50-100 ml of PLA, aspiration was done. Pre intervention liver functions like prothrombin concentration (PC), prothrombin time (PT) and international normalized ratio (INR) were also recorded. Under the normal values of PT, PC and INR Aspiration was done. In case of a cavity of more than 100 ml of PLA, pig tail catheter was placed under USG guidance. If a patient presented with acute abdomen, laparotomy was performed after assessment. If a patient was suspected of ALA, intravenous (IV) metronidazole was started. on the basis of USG abdomen if there was doubt in diagnosis for some cases contrast enhanced computed tomography (CECT) scan was done. For diagnosis of multiple LV was managed initially by IV antibiotics.

Results:

During the period of study total 30 patients were included in this study. The mean age of patients was 6.2 years and age range was 3 -12 years. Male to female ratio was 1.5:1 patients shows the clinical features as fever, abdominal pain and abdominal distension. Maximum patients showed main complain as fever by 25 patients (83.3%) followed by abdominal pain (right hypochondrium) by 20 patients (66.7%) , abdominal distension by 5 patients(16.7%), Peritonitis by 3 patients (10%) and Subacute intestinal obstruction by 2 patients (6.7%).

Table 1: Showing the Way of clinical presentation

Main complain	No. of patients	Percentage
Fever	25	83.3
Abdominal Pain (right hypochondrium)	20	66.7
Abdominal distension	5	16.7
Peritonitis	3	10.0
Subacute intestinal obstruction	2	6.7

In this study by using the different diagnostic methods, USG abdomen showed LA in 22 (73.3%) patients. there was a difficult on USG as the diagnosis was doubtful In 6 (20%) patients. In these patients CECT is used for confirmation of diagnosis. 10% patients were showed peritonitis diagnosed intraoperatively. The abscess was in right lobe in 21 (70%), multiple in 5 (16.7%), and left lobe in 4 (13.3%) patients. In three patients Conservative management was successful. USG guided needle aspiration was successful in 6(20%) patients. In 19 (63.6%) patients Pigtail insertion was done and in 2 (6.7%) patients

Laparotomy was performed. In one patient rupture of abscess in right pleural space was found in which intracostal drain (ICD) placement was done. In 17 patients showed culture report positive for pyogenic in which 14 was polymicrobial, and in 3 patients *Staphylococcus aureus* was isolated.

Table 2: Showing the diagnostic methods

Methods of diagnosis	No. of patients	Percentage
USG	22	73.3
CECT	5	16.7
Diagnosis made during laparotomy	3	10

Table 3: Showing the sites of abscess

Sites of abscess	No. of patients	Percentage
Right lobe of liver	21	70
Left lobe of liver	4	13.3
Multiple liver abscesses	5	16.7

Table 4: Showing perspective of Treatment

Treatment modality	No. of patients	Percentage
Conservative management	3	10
USG guided aspiration	6	20
Pig tail insertion	19	63.3
Laparotomy	2	6.7

Discussion:

In developed countries LA is not so common whereas in developing countries is LA is common except in cases of septicemia or in children with major debilitating diseases, granulocyte dysfunction, or immunosuppression^{xv, xvi}. In LA there may be occur ascending infection via the umbilical and portal veins, via the biliary tree, haematogenous spread or through direct contiguous spread from neighbouring structures^{xvii}. There are many studies in which most of the patients had PLA (84%) and clinical features like pain and fever has also been notice which is similar to this study^{xviii}. In this study showed male to female ratio was 1.5:1 which is similar to the study of done by Ba ID et al^{xix}. According to the study of Ghosh et al^{xx} it is reported that pain in abdomen and fever are most common symptoms with frequency of 99% and 94% respectively whereas various other studies quote it in range of 62-94% and 67-87%,

respectively which is almost similar to this study. USG play an important role in the diagnosis of LA. In the USG ultrasonic appearance of LA has been described as abscess wall, acoustic enhancement, peripheral halo, septation, and internal debris^{xxi, xxii}. In sometime there may be difficult to differentiate LA from other liver masses such as hematoma, necrotic neoplasm, and complicated (hemorrhagic or inflammatory) cyst^{xxiii}. There may be difficult in Clinical distinction between amebic and pyogenic liver abscess at time. Amebic serology is 95% sensitive and specific, but in areas of high prevalence like India, false positivity may problem. PCR from the aspirate is approximately 100% sensitive and specific, but lacking of widespread availability^{xxiv}. In the study of Kumar et al has showed that moderate to severe malnutrition in 27.8% patients with liver abscess which is similar to this study^{xxv}. According to the study of Donovan et al^{xxvi} and Bari et al^{xxvii} as high as 33 to 35% cases of cryptogenic liver abscess have been reported which showed higher than this study. Sometime in the culture abscess may also be sterile because of prior antibiotic therapy received.

Conclusion:

In children liver abscess is an important cause for morbidity. Liver abscess should be suspected presenting with prolonged fever and pain in upper abdomen to the emergency department. For the diagnosis of liver abscess Ultrasonography is an easy, widely available non-invasive and cost effective investigation. If timely it is not cure it may lead to rupture and mortality. High index of suspicion, early screening and appropriate intervention in form customized management may raise good results.

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