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DIAGNOSIS AND MANAGEMENT OF LIVER ABSCESS PATIENTS ADMITTED IN POST GRADUATE DEPARTMENT OF SURGERY JLNMCH, BHAGALPUR ,BIHAR.

General Surgery

Dr Chandra Mauli Upadhayay Associate Professor, Dept of Surgery, JLNMCH, Bhagalpur.

Dr Farhan Ahmad Neyazi* Senior Resident, Dept of Surgery, JLNMCH, Bhagalpur. *Corresponding Author

ABSTRACT

Liver abscess, a disease troubling mankind from ancient times, has earliest documentation in the Sanskrit document having potentially lethal consequences. However two major types are known amoebic and pyogenic, in medical literature. Pyogenic liver abscess constitutes major bulk of hepatic abscess in western countries.

Amoebic liver abscess (ALA) is an uncommon but potentially life-threatening infection with the protozoan parasite *Entamoeba histolytica. E histolytica* is widely distributed throughout the tropics and subtropics.The parasite is transmitted via the fecal-oral route, and once it establishes itself in the colon, it has the propensity to invade the mucosa, leading to ulceration and colitis, and to disseminate to distant extraintestinal sites, the most common of which is the liver.The patients of liver abscess presents with fever ,anorexia,abdominanal pain,right side chest pain weight loss, ,diarrhoea or dysentery.On clinical examination of the patient we get fever,right upper quadarant and epigastric tenderness tenderness,right basilar lung signs,rt.intercostal tenderness and icterus.

The diagnosis is confirmed by ultrasonography and reddish brown (anchovy-paste like material) aspirate from abscess. The diagnosis, treatment and prognosis, of liver abscess have evolved remarkably over past few years. Imaging has improved diagnostic competence and has altered therapeutic strategy. The study aims at early diagnosis and to set up some guide lines in view of either conservative or interventional management .

Methods:. A total of 45 patients were enrolled in the study who were admitted in JLNMCH Bhagalpur since January 2018 to March 2020. All patients with suspicion of having liver abscess were confirmed on Imaging and included as present study population. We studied mainly presentation, role of conservative treatment , aspiration, pigtail catheter,closed tube drainage of right side chest after bursting of liver abscess in right thorax and open laparotomy with peritoneal lavage and closure of abdomen with a closed drain. Outcome and post procedural complications were noted.

Results: All patients presented with Pain right or left upper side of abdomen. Majority of present study group patients had fever with or without rigors and deranged liver function. Imaging is the most diagnostic method and also helped in therapy and follow up.

Conclusions: Males are affected more than females. Imaging is the best modality for diagnosis, therapy and follow up. Aspiration or pigtail drainage is the standard method of drainage. Pigtail drainage is the better method of treatment than aspiration.If liver abscess burst into abdomen,laparotomy was required and in case if there was right side pyothorax closed chest drainage done.

KEYWORDS

INTRODUCTION

Liver abscess, has a very long historic and Medical background mentioned in very old literature (3000 BC). The disease condition may have high mortality and morbidity because of certain complications, if early diagnosis and management is not done.1 In world literature mainly two major descriptions for aetiology is known, amoebic and pyogenic. Western Literature for liver abscess suggest Pyogenic liver abscess constitutes major chunk of hepatic abscess. Although no distinct clinical criteria exist for distinguishing the two types, the diagnosis of amoebic and pyogenic abscess can be made by following points-younger age, resident or recent travel to areas of endemic Amoebiasis, diarrhoea and marked abdominal pain raise clinical suspicion of amoebic liver abscess.Pyogenic liver abscesses, result from ascending biliary tract infection, haematogenous spread via portal venous system, generalized septicaemia with involvement of liver by way of hepatic arterial circulation, direct spread from intra-peritoneal infection and other causes.The diagnosis of amoebic liver abscess is confirmed by ultrasonography, reddish brown (anchovy-paste like material) aspirate, negative gram stain and resolution with Metronidazole treatment. The diagnosis of pyogenic liver abscess is made by symptoms of picket fence configuration of temperature chart, nausea, vomiting,anorexia,anemia,leucocytosis and positive blood culture. Escherichia coli, Klebsiella and streptococcus are most commonly found organism followed by staphylococcus and pseudomonas The diagnosis, treatment and prognosis of liver abscess have evolved remarkably over past few years. Imaging has improved diagnostic competence and has altered therapeutic strategy by allowing the possibility of percutaneous drainage. Rapid diagnosis, effective antimicrobial therapy, treatment of underlying disease, and orderly approach to therapeutic interventions directed towards the abscess remain the mainstay of management of hepatic abscesses. The concept of minimally invasive drainage, continues to be of paramount importance in treatment of hepatic abscesses. With these views in mind, a study has been carried out in 45 patients, to evaluate the current features of liver abscess in regard to the presentation, its association with addictions, co morbid conditions and the different modalities of treatment. The study aims at early clinical and imaging wise diagnosis of liver abscess, in view of management with either conservative or intervention (aspiration, pig tail catheterization) to be done in a case of liver abscess in a given population.

METHODS

The present study was carried out in JLNMCH Bhagalpur, a tertiary care hospital, from january 2018 to March 2020. A total of 45 patients were enrolled in the study (N=45).

Inclusion criteria

- Patients suspected of having liver abscess on the basis of history and clinical assessment which were then Confirmed by USG and laboratory work up.
- Patients more than 18 years.
- Liver abscess which ruptured in peritoneal and pleural cavity.

Exclusion criteria

- Patients aging less than 18 years.
- Abscess associated with malignancy.
- Immunocompromised patients.
- Ascitis.

Sample design

- 45 patients, admitted with clinical, laboratory and imaging feature of liver abscess.
- Study factors: age, gender, occupation, address, socioeconomic status, addiction, comorbidity, complete haemogram, liver function test, USG feature. Culture of aspirated material from liver abscess, blood culture treatment modalities, treatment outcome.

Methodology

A complete physical examination including examination of abdomen and chest following proper history. Specific Investigations including

Hb%, TLC, DLC, liver function test, prothrombin time, blood for HBSAg, HIV, fasting and post prandial blood sugar, ultrasound of abdomen, chest X ray, microscopic examination and culture of aspirated pus, blood culture. The patients were divided into two treatment groups.

- Group 1: with abscess cavity <5 cm (150 cc)-they received only medical management and /or percutaneous aspiration.
- Group 2- with abscess cavity >5 cm (>150 cc) or smaller abscess which failed to respond to drug therapy alone and left lobe abscess.They in addition treated with USG guided-percutaneous needle aspiration or catheter drainage.

Medical treatment

- Amoebic liver abscess: all patients with diagnosis of amoebic liver abscess of size < 5cm were treated with Metronidazole in divided doses.
- Pyogenic liver abscess: All patients with PLA of size <5cm (<150 cc) or if there were small multiple abscess which were either solidified and not amenable for tapping were treated initially with broad spectrum antibiotics till the culture and sensitivity report were available then treatment was guided as per sensitivity report.

Guided aspiration

- The patients with abscess size >5 cm or smaller abscess those who failed to improve clinically and left lobe abscess were subjected to imaging guided aspiration. Informed consent was taken from the patients explaining the complications of the procedures for which open surgical intervention might be needed. The patients were examined daily for clinical improvement. Improvement in fever, and USG was done on 3,7,14 day, repeat TLC was done on day 3.
- *Technique of pigtail catheter drainage (PCD) of liver abscess under ultra sound guidance after inflitration of local anaesthesia*

5Fr to 10Fr pigtail catheter having multiple side holes is placed in the abscess cavity. The draining catheter was properly secured in its place and connected to a collecting system.X-ray was done after catheter drainage to rule out pleural effusion or pneumothorax. Catheter output charting was done daily and a chart was maintained.

The first review ultrasound was done when drainage over last 24 hours had declined to < 10ml. If the abscess had resolved, the catheter was removed. If residual cavity was present, the catheter was flushed with saline and aspirated till no material was found. Further review ultrasound was done every third day and the catheter was removed if the catheter drainage had remained minimal.Otherwise, the catheter was left until catheter drainage had stopped.

Statistical analysis

Descriptive statistics: The data was presented in tabular form with mean, standard deviation, range and others for descriptive statistics.

- Analytical statistics: Correlation was established using Mc Nemar Fisher t test and qualitative analysis was done using Chi square test. The statistical software used in the analysis was SPSS20.0 EPR Info software.

RESULTS

Total of 45 patients with a diagnosis of liver abscess were included in the study. The demographic, clinical, laboratory, and imaging data for all patients was collected and recorded on a predesigned record form.

The outcome was studied. The observations are as follows:

- The mean age of presentation was 40.55 years. The youngest patient was of the age 20 years and the oldest was of 70years (Table 1).

Table 1: Age group	Frequency	Percentage
> 20-30	6	13.33
>30-40	12	26.66
>40-50	13	28.88
>50-60	12	26.66
> 61	2	4.44
Total	45	100

Gender distribution: There were 40 males (88.88%) and 5 females (11.11%) enrolled in the present study with 34 patients in Amoebic liver Abscess 11 in Pyogenic liver Abscess.

Types of abscess	Male	Female	Total
Amoebic liver abscess	30	4	34
Pyogenic liver abscess	10	1	11
Total	40	5	45

The overall male :female ratio is 8:1

clinical symptoms---pain abdomen was present in 96%,fever in 90%,vomiting in 60%,chills and rigors 60% ,jaundice 45%,diarrhea 40% and cough 26%.

On clinical examination ---- Tenderness in right hypochondrium and epigatirum 100%, lump in abdomen was found 60%. hepatomegaly 64%,intercostal tenderness right side 75%,decreased breath sound 45% .

Liver function tests in patients

The value of serum bilirubin was raised >1.2mg/dl in 46% cases,SGPT was raised in 20%, SGOT was raised in 22% and serum Alkaline phosphatase was raised in 50% cases.

Role of Ultrasonography.

USG is simple, inexpensive, and quick to perform with a diagnostic accuracy of 90%. USG is very important in therapeutic intervention for guided aspiration and pigtail insertion. It gives idea about the site ,size and number of abscesses.On ultrasonography the site of involvement ----right lobe liver was 85%,left lobe was 5% and both lobes was 10%.The amoebic liver are single in 75% and multiple in 25% cases.The pyogenic liver abscess is multiple 56% and single in 44% cases.It also gives us an idea about whether it has burst into peritoneal cavity or pleural cavity or not.In our case one patient had burst liver abscess in peritoneal cavity and another in right thorax. USG is also of great use in follow up of patients.

Role of CT scan

CT abdomen has role in atypical conditions like atypical or chronic case. CT may be of value; it shows better rim enhancement with contrast enhancement in pyogenic liver abscess and high density of the contents in necrotic liver tumours.

Xray chest ---- About 35% of patients had Right sided pleural effusion,20% had bilateral pleural effusion.

Treatment

In present study it was found that multiple liver Abscesses came out to be pyogenic liver abscess . Where there is a single Abscess cavity, it came out to be Amoebic liver abscess. Medical management started in all patients.

Current treatment recommendations for amoebic liver abscess (ALA)

Treatment phase*	Drug	Dose	
		Adult	Pediatric
Initial treatment of ALA	Metronidazole	750 mg PO TID × 7–10 days	35–50 mg/kg/day DIVIDED TID × 7–10 days
	Tinidazole (not available in Canada)	2 g once PO daily × 3 days	>3 years: 50 mg/kg/day (max 2 g) PO in 1 dose × 3 days
Clearance of luminal cysts	Iodoquinol	650 mg PO TID × 20 days	30–40 mg/kg/day DIVIDED TID × 20 days (max 2 g/day)
	Paromomycin	500 mg PO TID × 7 days OR 25–35 mg/kg/day DIVIDED TID × 7 days	25–35 mg/kg/day DIVIDED TID × 7 days

Antibiotics and IV fluids were also given as per condition of the patient.We used ceftriaxone 1gm iv BD and Metronidazole 100ml IV TDS.

Out of 45 patients 18patients underwent USG guided Aspiration.in 10 patients Pigtail catheterization was done and in 5 patients combined approach was made .Pus was sent for culture and sensivity.Pus culture of aspirated fluid 70% of pyogenic abscess showed growth, none of the amoebic abscess showed growth on culture medium. The P (<0.001) value is significant the aspirated fluid from Amoebic liver Abscess was

sterile.In one case laparotomy was required because the abscess had burst into peritoneal cavity.In another case the abscess had burst into the right pleural space ,closed chest tube drainage was done.

Decrease in volume of abscess cavity on USG is maximum in Pigtail aspiration and Pigtail groups with a significant P value it was followed by aspiration and then by conservative treatment. Relief of symptoms on day 3, no significant relief was found in either of the groups. Symptomatic relief was maximum in Aspiration group followed by Pigtail and then by conservative group. Readmission was maximum in conservative group followed by aspiration; no readmission was noted in pigtail and Pigtail+Aspirations. It States that pigtail catheterization is a better modality of treatment.

DISCUSSION

The present study was done on 45 patients. on review of literatures it was found that that the common age group is between 30-50 years. The mean age of presentation was 45.56 years. The youngest patient was of the age 22 years and the oldest was of 75years. Reports in the literature shows that there is a male preponderance in a ratio ranging from 10:1 to 17:1.In present study, the overall male to female ratio of 8:1. Study carried out in (2004) Karachi, showed that 48% of pyogenic hepatic abscesses, 67% of patients with amoebic liver abscess got fever. Majority of present study population was suffering from fever (90%) at the time of presentation and 60% of the study subjects got associated chill and rigor. Incidence of pain in abdomen in recent report varied up to 96%.But from India Kapoor et al showed 75% patients presented with abdominal pain. Present study result simulates the result of this study 100% of the patient in Amoebic and 100% of pyogenic had abdominal pain (Right hypochondriac). A larger Indian study carried out in 2005 showed 31.94% patients got jaundice. In present study 45% of population had jaundice. Present study showed that most of the cases had leucocyte count ranging from 12000 to 30500 cells/mm3 . Study by D' Angelica M et al they found E. coli followed by Klebsiella as most frequent organism.In present study the most common organism found was E coli followed by *Staphylococcus aureus* .

Present study revealed that PCD[pigtail catheter drainage] was more successful in terms of recurrence of abscess, relief of symptoms and decrease in size of abscess cavity. patients who underwent PCD required less readmission in hospital as compared to PNA [percutaneous needle aspiration]. About 50% patient of PCD had their symptoms relieved within three days, however in USG, PNA also shows 46%-almost equivalent result. The major advantages of PNA over PCD are: it is less invasive and less expensive; avoids problems related to catheter care; and multiple abscess cavities can be aspirated easier in the same setting.There are some problems with catheter drainage like nuisance to the patient, pain, cellulitis at the insertion site and sometimes catheter dislodgement. The success rate of PNA in the literature varies from 79-100%. Another important reason for failure of needle aspiration is the inability to completely evacuate the thick viscous pus that may be present in some of the abscesses. Rapid re-accumulation of pus in the abscess is another reason described for failure of needle aspiration. Placement of an indwelling drainage catheter addresses, all three of these issues as it provides continuous drainage, drains thick pus because of wider calibre catheter, and prevents re-accumulation.

CONCLUSION

Present study includes 45 cases of liver abscess following are the conclusions of present study. The most common age group affected by Liver abscess was third and fifth decade of life. Males are more commonly affected than females. Ultrasonography is the standard modality for diagnosis as well as therapeutic drainage of abscess and also follow up.In our study we found that the incidence of amoebic liver abscess was more as compared to pyogenic liver abscess. Pyogenic liver Abscess most common pathogen was E.coli followed by Staphylococcus aureus and Klebsiella. There is increasing association of diabetes with both types of abscess. Image guided drainage is the best modality of treatment for liver abscess. In case of larger abscess (>5cm) or 150cc, Ultrasound guided percutaneous pigtail catheter drainage is a superior therapeutic approach than percutaneous needle aspiration.If there are multiple abscess cavity the larger abscess cavity should be drained by pigtail catheter and smaller ones should be aspirated. Patients treated with ultrasound guided percutaneous catheter drainage improved rapidly than those treated with needle aspiration. Abscess cavity resolves better in case of catheter drainage than needle aspiration. Pigtail is better than aspiration group as compared to recurrence and readmission, but the hospital stay of Pigtail is longer.

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