

“To Study the Clinico-Pathological Profile and Radiological Characteristics in Patients with Liver Abscess”

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Abstract: Background: Liver abscess is a serious problem especially in tropical regions like the Indian subcontinent. Its significant mortality and also poses diagnostic and therapeutic challenges. Present study describes the clinical, pathological and radiological profile of liver abscess patients attending the tertiary care hospital during the study period. **Aims & Objectives:** To Study a Clinico-Pathological profile and Radiological Characteristics of liver abscess patients. **Methods:** This is Prospective study was carried out in the Department of Medicine, G.R. Medical College and J.A. Group of Hospitals, Gwalior between January 2016 to August 2017 Total of 120 cases of liver abscess were included in the study. **Statistical Analysis:** All the data analysis was done using IBM SPSS version 20 software. Data is expressed as percentage and mean \pm SD. Student t test and analysis of variance was used to tabulate the data. P value of <0.05 is considered as significant. **Results:** The age of patients ranged from 16 to 82 years. Out of 120 patients, 107 were males and 13 were females with a Male to female ratio of 8.23:1. The most common presentation of Liver Abscess was fever, abdomen pain & malaise which were present in 94.2%, 90.8% & 90 % in our patients respectively and signs like tender hepatomegaly and pallor were 75% and 73.33% respectively. Fever with chills and abdomen were most common in 21-40 age group and Nausea, weight loss and Anorexia were most common in 41-60 age groups. The right lobe (80%) was most commonly involved. Abscess was most commonly solitary (57.5%). Maximum patients had abscess size between 100-300mL (75%). In relation to aetiology, amoebic liver abscess was the most common type. Investigations found that 64 cases (53.3%) were amoebic in origin, 56 cases (46.7 %) were pyogenic in origin. Pyogenic liver abscess 44 (78.5%) was generally multiple in type. **Conclusion:** In present study most common symptoms like fever, abdomen pain, malaise where tender hepatomegaly & pallor was most common signs. In younger age groups fever with chills and abdomen pain was most common due to good immunity where in older age groups non-specific symptoms were most common. Most common aetiology associated with abscess was amoebic which is solitary in type and maximum size belong to more than 100 mL in radiological characteristic where Pyogenic liver abscess is generally multiple in type and smaller size in radiological appearance.

Key words: Male, Female, Fever, Abdomen Pain, Amoebic liver abscess, Pyogenic Liver Abscess, Right lobe,

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I. Introduction

Liver is an important vital organ of the body. This organ is subjected to numerous systemic infections viral, bacterial and parasitic and lies at the distal end of the portal circulation; it is therefore bathed with portal blood containing viruses, bacteria, parasites, ova, products of digestion and other antigens.

Hepatic or liver abscesses are infectious, space-occupying lesions in the liver; the two most common abscesses being pyogenic and amoebic. Pyogenic liver abscess (PLA) is a rare but potentially lethal condition, with a reported incidence of 20 per 100000 hospital admissions in a western population. Its severity depends on the source of the infection and the underlying condition of the patient. Amoebic liver abscesses (ALA) are common in tropical regions mainly where ‘*Entamoeba histolytica*’ is endemic and is more prevalent in individuals (mostly young males) with suppressed cell mediated immunity. In both the types of hepatic abscesses, right lobe of the liver is the most likely site of infection. The clinical presentation of both the types may be elusive with combination of fever, right upper quadrant pain and hepatomegaly with or without jaundice.

Laboratory findings in patients with Hepatic Abscess are also relatively nonspecific. The most common abnormalities are elevated white blood cell count (WBC), elevated C-reactive protein, hypoalbuminemia, elevated aspartate aminotransferase (AST), elevated alanine aminotransferase (ALT), elevated alkaline phosphatase (ALP), elevated gamma glutamyl transpeptidase (GGT), elevated bilirubin, and elevated international normalized ratio (INR).²

While laboratory testing alone is not diagnostic, laboratory abnormalities usually prompt imaging studies that lead to the diagnosis. Diagnosis of Hepatic Abscess is made by imaging in 90% of cases. Imaging can also help identify the underlying cause in some cases. The primary methods of diagnostic imaging are conventional ultrasound (US) and CT. Both methods carry a sensitivity of 96%–100% for detection of HA.³

It is no surprise that a definitive differential diagnosis cannot be based on sonographic findings alone. As a practical matter, diagnosis of hepatic amoebic abscess is based on sonographic findings, clinical data, and laboratory data. Confirmation is usually obtained by appropriate response to amoebicidal therapy. Percutaneous aspiration can be used when clinical doubt remains after the analysis of the sonograms and clinical and laboratory data.⁴

A review of the literature suggests that 40% of hepatic abscesses in persons under the age of 20 with chronic granulomatous disease. Other common sites of infection in patients with granulomatous disease include the skin, respiratory tract, lymph nodes, and bones. Recurrent infections in these younger adults are secondary to an inability of neutrophilic leukocytes to destroy certain ingested bacteria and fungi. Defective hydrogen peroxide formation due to a variety of enzymatic abnormalities is the underlying defect. The most common organism appears to be *Staphylococcus aureus*, as was the case in all 3 patients in this study. Two of these patients had multiple abscesses; the third had a solitary left lobe abscess.⁵

The increasing use of newer cytotoxic drugs, immunosuppressive agents, steroids, and antibiotics, along with aggressive radical surgical procedures and intensive irradiation, has resulted in an increase in the incidence of opportunistic infections. Computed tomography is capable of detecting and diagnosing sites of infection and guiding subsequent intervention including abscess drainage.

II. Materials & Methods

It was a prospective cross-sectional study done over a period of two years at our tertiary care hospital. Total of 120 liver abscess patients managed by the medicine department of the hospital were included in the study. Details related to history, clinical examination, ultrasonography findings of the cases and outcome were recorded and described. Serological tests for *Entamoeba histolytica*. All patients underwent USG guided aspiration of the liver abscess which was done either by the percutaneous needle or by using pigtail catheter. Sterile containers were used for aspirate collection and samples were immediately sent to the Microbiology Department. Microscopic examination of the wet mount for trophozoites of *Entamoeba histolytica*, and Gram's staining was done. Samples were also plated in anaerobic, aerobic, and the fungal culture media. While the pus culture reports were awaited, patients were empirically started on intravenous antibiotics.

Aims & Objectives

To study clinical and pathological profile as well as radiological characteristics in patients with liver abscess.

Inclusion Criteria

Adult patients with liver abscess admitted in Jayarogya Hospital Gwalior will be included as subject.

Exclusion Criteria

Paediatric population was excluded.

Statistical Analysis

All the data analysis was done using IBM SPSS version 20 software. Data is expressed as percentage and mean \pm SD. Student t test and analysis of variance was used to tabulate the data. P value of <0.05 is considered as significant.

III. Observations & Results

The age of patients ranged from 16 to 82 years. Majority of the patients were alcoholic 69 (59.5%). Out of 120 patients, 107 were males and 13 were females with a Male to female ratio of 8.23:1. The most common presentation of Liver Abscess was fever, abdomen pain & malaise which were present in 94.2%, 90.8% & 90 % of our patients respectively. (Table 1) Patients with Fever & chills, abdominal pain, right lower Chest Pain and Malaise were higher in age group 21-40 year whereas Nausea and weight loss and anorexia were higher in age group 41-60 years.

TABLE 1

Symptoms	Patients (n=120)	Percentage
<i>fever</i>	113	94.2
<i>Chills</i>	70	58.3
<i>Abdominal Pain</i>	109	90.8
<i>Chest Pain</i>	40	33.33
<i>Nausea</i>	58	48.3
<i>Malaise</i>	108	90
<i>Weight Loss</i>	58	48.3
<i>Anorexia</i>	92	76.7

TABLE 2

Lobes of Liver	Frequency	%
Left	3	2.5
Right	96	80.0
Right + Left	21	17.5
Total	120	100.0

TABLE 3

Number of Abscess	Type of Liver Abscess		Total
	Amoebic Abscess	Pyogenic Abscess	
Multiple	7	44	51
Solitary	57	12	69
Total	64	56	120

The right lobe abscesses was most common (80%) (Table 2) and were frequently solitary abscess (57.5% (Table 3). In relation to aetiology, amoebic liver abscess was the most common type. Investigations found that 64 cases (53.3%) were amoebic in origin, 56 cases (46.7 %) were pyogenic in origin (Table 4). 25% patients had <100 mL abscess were 75% patients 100-300 mL abscess in radiological appearance (Table 5). Pyogenic Liver Abscess was significantly higher in multiple abscesses, while amoebic liver abscess were higher in solitary abscess. (p<0.001)(Table 6).

TABLE 4

Abscess Type	Frequency	Percent
Amoebic	64	53.3
Pyogenic	56	46.7
Total	120	100.0

TABLE 5

Abscess Size (ml)	Frequency	Percent
<100	30	25.0
100-300	60	50.0
>300	30	25.0
Total	120	100.0

TABLE 6

Number of abscess	Frequency	Percent
Multiple	51	42.5
Solitary	69	57.5
Total	120	100.0

The patients with Fever (96%), chills (71.1%), abdominal pain (94.2%) were higher in age group 21-40 years whereas Nausea (78.9%), weight loss (68.4%) and anorexia (94.7%) were higher in age group >40 years. (Table 7)

TABLE 7

Symptoms	Age Groups (Years)			
	≤20	21-40	41-60	>60
Fever	11	50	43	9
Chills	9	37	23	1
Abdominal pain	11	49	43	6
Right Lower Chest Pain	4	20	15	1
Nausea	0	13	35	10
Malaise	9	46	45	8
Weight loss	3	16	30	9
Anorexia	5	33	44	10

The signs like Tender Hepatomegaly [90 (75%)] was most common in liver abscess patients followed by pallor [88 (73.33)] and icterus [69 (57.5%)]. Icterus (62.5%) was significantly higher in pyogenic liver abscess. (TABLE 8)

TABLE 8

Symptoms	Patients (n=120)	Percentage
Tender Hepatomegaly	90	75
Pallor	88	73.33
Icterus	69	57.5

IV. Discussion

Liver abscess is one of the most important clinical problems confronting a physician in India. The two most common varieties of liver abscess (pyogenic and amoebic) are usually indistinguishable clinically and further investigations and/or invasive procedures are usually needed to establish the diagnosis as they have different lines of treatment.⁶

Mangukiya et al in their meta-analysis reported that tenderness in right hypochondrium was the predominant sign (95%) whereas 26% patients were presented with hepatomegaly, majority of liver abscesses (83%) were found in the right lobe of liver. Both lobes were involved in 12.5% of patients, more than 50% of abscesses were solitary at the time of presentation, mean abscess size in the aspiration group was 6.87 cm, among the aspiration group of patients, 59.3% had solitary abscess, while 25.66 and 15.04% had two and multiple liver abscesses.⁶

Similar to Mangukiya et al in present study pallor, tender hepatomegaly were higher in ALA whereas Icterus was higher in PLA, right lobe (80%) was most commonly involved followed by both the lobes (17.5%), maximum patients had abscess size between 100-300 ml (50%), and most of the patients had solitary abscesses (57.5%). Similar to most common sign was tender hepatomegaly (75%) followed by anaemia (73.33) and PLA were significantly higher in multiple liver abscess while ALA were higher in solitary abscess ($p < 0.001$).⁶

Santos-Rosa et al identified the risk patients were men with mean age of 50 years old. Abdominal pain (90%), fever (70%) and jaundice (40%) were the most common clinical manifestations. Similar to that in present study male preponderance (89.2%) was recorded with most common age group being 21-40 years (43.3%).⁷

In present study patients with fever, chills, abdominal pain, right lower chest pain and malaise were higher in age group 21-40 yrs whereas nausea and weight loss and anorexia were higher in age group 41-60 yrs. Siddhique et al and Khan et al reported peak incidence of age between 21 -50yrs where in this study, peak incidence of age is 44 – 63yrs.^{8,9} Similarly fever, chills, abdominal pain, right lower chest pain, malaise, were higher in ALA whereas nausea, weight loss and anorexia were higher in PLA. However, in a study by Gyroffyet al they found slightly higher incidence in females (male: Female-13:20), which contradicts our and other studies reason is female was a cases for study.^{10, 11, 12} Nevertheless, males tend to have a poorer prognosis from PLA. Amoebic liver abscess was more prevalent.^{13, 14, 15} But Abbas et al performed a cross sectional study to analyse 67 adult patients who sequentially encountered episodes of liver abscess. They reported that most prevalent abscess was of pyogenic type (n=56 with male preponderance, with mean age of 47.4 ± 18.5 years and fever, abdominal pain and vomiting were the commonest presenting features, Whereas similar feature i.e. fever 92.5% abdominal pain 85.7% nausea 60.7% found in pyogenic liver abscess patient in our study.¹⁶ Most common presenting symptoms in present study were fever (94.2%) followed by abdominal pain (90.8%) and malaise (90%) which is in agreement with the previous study^{16, 17} Alkofer et al conducted a retrospective study of 103 pyogenic abscess cases. They also reported that fever and abdominal pain as the most common presenting symptoms. Whereas similar feature found in our study.¹⁸

The clinical features observed by Jha et al in patients with liver abscess were abdominal pain (93%), fever (88%), anorexia (62%), jaundice (22%), intercostal tenderness (91%), hepatomegaly (72%), and are consistent with previous and present reports.[3,5,12].^{19,20,21,22} Fever (94.2%), abdominal pain (90.8%) and anorexia (76.7%), tender hepatomegaly (75%), jaundice (57.5%) these Similar results were revealed by present study.

Jha et al did a prospective study involving 125 patients; they reported that ALA was the most common (88%) type of liver abscess among the study groups. Some limitations can be noted in our study; firstly, the study was hospital-based rather than population-based. However, our centre is the most common referral centre and therefore is likely to provide a true reflection of the actual burden of liver abscess in the country.

V. Conclusion

In present study most common symptoms was fever, abdomen pain, malaise and tender hepatomegaly where pallor was most common sign. In younger age groups fever with chills and abdomen pain was most common due to good immunity where in older age groups non-specific symptoms were more common that is most of times abscess present as a incidentally. Most common aetiology associated with abscess was amoebic which was solitary of maximum size in radiological characteristic whereas Pyogenic liver abscess is generally multiple of smaller size in radiological appearance.

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