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Clinico-Radio Logical Profile and Management Strategy of Space Occupying Lesions in Liver

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ABSTRACT: Introduction: A space occupying lesion by definition is a discrete abnormality arising within the liver. Due to its anatomical position and dual blood supply, the liver is affected by various types of space occupying lesions (SOL) [1]. Hepatic mass lesions include tumors, tumor-like lesions, abscesses, cysts, hamartomas, and confluent granulomas. The frequency with which each is seen varies in different geographic regions and different populations.

Aim: This study aims to evaluate the different type SOL in liver and their clinical presentation, Radiological features and their application in diagnosis and management. Evaluate outcome associated with different management strategies of SOL

Materials and Methods: 100 patients with space accupyinglision of liveradmitted to our institution between December 2018 to July 2020 were enrolled. Patient data was collected from attending, general surgery outdoor patient department, casualty and inpatient departments, irrespective of gender background socioeconomic status.

Results: Maximum numbers of cases were seen in agegroup 50–80year. Males were affected more than females. The most common etiology for SOLs of the liver in this study was liver abscess. The most common primary for secondary liver was from carcinoma stomach. The second most common etiology for SOLs of the liver observed in this study wasHydatid cyst.

Conclusion: Our study may provide useful information and current reference for clinician and pathologist to understand the clinico- radiological spectrum as well as the differential diagnosis of space-occupying lesions.

Key words: Liver abscess,Hydatid cyst, Space-occupying lesion

I. INTRODUCTION:

A space occupying lesion by definition is a discrete abnormality arising within the liver. Due to its anatomical position and dual blood supply, the liver is affected by various types of space occupying lesions (SOL) [1.] Hepatic mass lesions include tumors, tumor-like lesions, abscesses, cysts, hamartomas, and confluent granulomas. The frequency with which each is seen varies in different geographic regions and different populations. Hepatic mass lesions include tumors, tumor-like lesions, abscesses, cysts, hamartomas, and confluent granulomas. The frequency with which each is seen varies in different geographic regions and different populations. The liver is the most common destination of hydatid cyst (70%), followed by the lungs (20%), kidney, spleen, brain, and bone. The sensitivity and specificity of both ultrasonography and computed tomographic (CT) in confirming the diagnosis are high[2]. In adults, in most part of the world, hepatic metastasis is more common than primary malignant tumors of the liver, whereas in children, primary tumors outnumber both metastases and benign tumors of the liver. Hepatic metastases occur in 40–50% of adult patients with extrahepatic primary malignancies[3]. Most cases of pyogenic liver abscess are cryptogenic or occur in older men with underlying biliary tract disease. Different liver SOL has different etiology and risk factor, so it is important to find out etiology and risk factor in Indian subcontinent, which would help us to treat different kinds of SOL of the liver.

II. AIM:

This study aims to evaluate the different type SOL in liver and their clinical presentation, Radiological features and their application in diagnosis and management. Evaluate outcome

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associated with different management strategies of SOL

III. MATERIALS AND METHODS:

100 patients with space occupying lesion of liveradmitted to our institutionThe study was conducted for about 2 year. Patient data was collected from attending general surgery outdoor patient department, casualty and inpatient departments, irrespective of gender background socioeconomic status.

IV. RESULTS:

A total of 100 patients with space-occupying lesions liver satisfying inclusion criteriawere included in the study. Liver SOL was much more common in males than females with a preponderance of almost (74%) in males. The peak incidence seen in the age group of more than 50yrs which accounted for almost (35%) of the cases. The commonly found risk factor among the study population includes alcoholism (17%), followed by diabetes mellitus (7%) The majority of the space-occupying lesion cases are presented with liver abscess (54%)., second most common Hydatid (17%), followed by Metastatic (16%) USG finding in Majority of the patients were diagnosed with liver abscess (45%), followed by liver space-occupying lesions (21%). single lesions were observed in 72% of the cases. in 95% of the cases right lobe was involved. based on the echogenicity, 53% of the cases are characterized as hyperechoic,20% of the cases presented with internal calcified on USG.The study showed that early diagnosis with USG had a significant role in decreasing the morbidity and mortality, in deciding the mode of treatment and in managing the liver abscess conservatively through percutaneous needle aspiration or Pigtail catheterization. Leucocytosis was found in 43% of cases, anemia was found in 28% of cases. The most common abnormality on LFT noted is raised alkaline phosphate in61%. Total bilirubin is raised only in 20%. A low Serum albumin levels <3.5g/dl in 36%. Majority of the patients CT findings revealed liver metastases (44.4%) followed by a liver abscess (25.0%) The microorganisms most commonly isolated from culture are E coli (24.1%) and in 30 patients had no growth on culture. Pain abdomen was the most common symptom which accounted for almost (83%) of patients followed by anorexia seen in 50% of patients. Patients with liver SOL presented with hepatomegaly in 53% with abdominal tenderness as the second most common sign involving 48% of patients. Pigtail catheterization (PCD) was considered the most effective modality of treatment for abscess with nearly 100% success rate. Open Surgery and Laparoscopic- Deroofing was most effective modality oftreatment for Hydatid cyst with 100% success rate. Most case of simple cyst, patient was asymptomatic. A variety of primary tumour may be the source for the metastasis; however, inour study adenocarcinomas were the most prominent among them. Mostcommon primary site of metastasis involved stomach (31%).

V. DISCUSSION:

A total of 100 patients were Clinico-Radiologically confirmed of space-occupying lesions of liver were included in the study from December 2018 to July 2020 inSubharti medical college hospital, Meerut.

In present study Mean age presentation of liver SOL is 42.82 ± 16.62 years. The higher incidence occurred in the age group of 50 to 80 years (35%). Males (74%) are affected more than females. The male–female ratio is approximately 7:1. This is in accordance with the study conducted by **Patel et al**[4], which also states that the majority of their study were males (64.93%). Males had increased susceptibility for liver diseases, and a predominance of males was noted. **Mallick et al**[5]**,** postulates that Male is commonly affected than female, Out of 40 patients 28(70%) patients were male and 12(30%) patients were female.

In our study, the commonly found risk factors include alcoholism (17%), followed by diabetes mellitus (7%). **Raja et al**[6], which reports Alcoholics are affected twice than non-alcoholics. **Tian Lt et al**[7], Studies found DM as a concomitant disease in 29.3%–44.3% of patients with liver abscess.

In our study, Liver abscess was commonest cause of liver SOL (54%), second mostcommon Hydatid (17%), followed by Metastatic (16%). Simple liver cyst were foundin 10% of population and 2% of patient had Hepatocellular carcinoma. Heamangiomais least common and found in only 1% of patient (table1). A study done by **Sahid ImamMallick et al**[8], reports that Metastatic adenocarcinoma was commonest cause of liverSOL found in (32.5%). Amoebic liver abscess was second most common cause of liver SOL (20%), followed by Pyogenic liver abscess (15%).

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Name Of Disease	Frequency	Percentage
Liver abscess	54	54%
Metastatic	16	16%
Hydatid cyst	17	17%
Simple hepatic cyst	10	10%
Primary HCC	2	2%
Haemangioma	1	1%
Total	100	100%

Table-1 Descriptive analysis of space-occupying lesions of the liver in study population (N=100)

In present study, Laboratory investigations were analyzed. Leucocytosis was found in 43% of cases, anemia was found in 28% of cases. The most common abnormality on LFT noted is raised alkaline phosphate in 61%. Total bilirubin is raised only in 20%. Serum albumin levels <3.5g/dl in 36%.**Patel et al**[4], postulates that 90.32% of patients had a liver abscess increased total leucocyte counts > 10000/Cu mm. **Sukhjeet Singh et al**[9], for liver abscess, that 44 of 60 patients (73%) had leukocytosis. Elevation ofserum alkaline phosphatase was also observed in 75% of the patients.

Our study participants presented with the symptoms of pain abdomen (83%), anorexia (50%), fever (48%), weight loss (44%), vomiting (38%), cough (23%) and jaundice (20%).A study conducted by **Raja et al**[6], the participants presented with symptoms such as right upper quadrant abdominal pain, fever (commonly in abscess), anorexia and weight loss (commonly in malignancy).

Symptoms	Frequency	Percentage
Pain abdomen	83	83%
Fever	48	48%
Vomiting	38	38%
Jaundice	20	20%
Anorexia	50	50%
Cough	23	23%
Weight loss	44	44%

Table 2: Descriptive analysis of symptoms in study population

The clinical signs observed in the study population include hepatomegaly (53%), tenderness (48%), pallor (29%), pleural effusion (24%), icterus (20%) and ascites (13%) which is in concordance with the study conducted by **Patel et al**[4], reported that 68.85% had hepatomegaly.(table-3)

Clinical sign	Frequency	Percentage
Tenderness	48	48%
Hepatomegaly	53	53%
Icterus	20	20%
Pallor	29	29%
Ascites	13	13%
Tenderness	48	48%

Table 3: Descriptive analysis of clinical sign in study population (N=100)

In present study Pus culture was done in 54 patients with liver abscess. The microorganisms most commonly isolated from abscess culture include E.coli (24.1%), Klebsiella pneumonia (7.4%), pseudomonas (7.4%), staphylococcus (5.6%). 30 patients (56.5%) had no growth on pus culture. which is similar with **C L Rajak et al**[10] **and Rustam Khan et al** [11]who found similar findings.

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Organism isolated	Frequency	Percentage
E.COLI	13	24.1%
Klebsiella	4	7.4%
Pseudomonas	4	7.4%
Staphylococcus	3	5.6%
No	30	55.6%
Total	**54**	100%

Table 4: Descriptive analysis of organism isolated in study population (N=54)

USG abdomen was done in all cases. Majority of the patients were diagnosed with liver abscess (45%), followed by liver space-occupying lesions (21%). Most of the study participants (65%) presented with lesions of size < 150cc and in 95% of the cases right lobe was involved. 53% of the cases are characterized as hyperechoic, 20% of the cases presented with calcified liver lesions. **Roy SK et al**[12], which revealed Majority of the metastasis were multiple (85%), hypoechoic (35%) and only 15% had internal calcifications. The validity of transabdominalsonography for the diagnosis of metastasis was confirmed by calculating sensitivity (100%), specificity (96.42%). 100 patients had liver SOL, out of which 36 patients investigated with CT of abdomen and pelvis. Out of 36 cases 3 cases of simple hepatic cyst, 9 cases of doubtful multiple Liver abscess on ultrasonography, 6 cases of hydatid cyst of liver, 16 cases of metastatic lesions and 2 cases of primary hepatocellular carcinoma (HCC) were investigated with contrast enhanced computed tomography for diagnosis and management. Majority of lesion is multiple (53.6%) and < 5cm size (83.3%). Similar result was found in a study which was done by **Patel**S. **et al**[4].

In the present study, most common SOL in was liverabscess, 54 patients out of 100 cases. In which 29 patients are treated with Pigtail catheterization along systemic antibiotics, 19 patients with Needle Aspiration and with systemic antibiotics. 06 patients with multiple abscesses combined pigtail catheter+ aspiration along with systemic antibiotic was done. In which complete resolved abscess seen in 83.3%. Those Patients underwent pigtail catheterization in which all of them had complete resolved abscess on follow up USG. Similar results were also observed in a study done by **Pang TC et al**[13].

Disease	Treatment	Frequency	Percentage
Liver abscess(N=54)	Needle Aspiration+Antibiotic	19	19%
	Needle Aspiration+Pigtail+Antibiotic	6	6%
	Pigtail+Antibiotic	29	29%
Haemangioma(N=1)	Conservative	1	1%
Simple Cyst (N=10)	Conservative	10	10%
Primary HCC(N=2)	Referred	2	2%
Hydatid Cyst(N=17)	Laparoscopic de-roofing	7	7%
	PAIR	6	6%
	Open surgical excision pericystectomy	2	2%
	Conservative	2	2%
Liver Mets (N=16)	Palliative treatment	8	8%
	Mastectomy with chemotherapy	3	3%
	APR with chemotherapy	3	3%
	Scalping-oophorectomy with chemotherapy	1	1%
	Orchidectomy With Chemotherapy	1	1%

Table 5: Descriptive analysis of treatment modalitiesin the study population (N=100)

In our study Hydatid cyst (16) was second most common SOL in liver. In which 48% patients were treated with Laparoscopic de-roofing, 38% with PAIR, and only 13% required open surgical pericytectomy. Maximum recurrence is seen in patient with PAIR. A study by **Chen etal**[14]**,**showed that clinical and parasitological cure in patients undergoing laparoscopic intervention was 98.7% and in patients receiving PAIR plus chemotherapy was 97.5%. In our study there were 16 cases of liver metes. 8 patients were managed with palliative treatment in which 3 patients died and 5

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patients had recurrence of disease. 8 patients underwent for surgical intervention in which 7 patients had recurrence of disease and one patient died.(table-6) Liver metes is common malignancy found in SOL if compare with primary HCC in our study.(table-5) Most common primary was stomach in case of liver metes.(table-6) Similar finding was seen in study done by **M. Raj, et al[6].**In present study Simple cyst are seen in 10 patients out of 100 cases. All of them managed conservative. A study by **Charlesworth P et al[15]**, Simple cysts usually do not grow or cause complications.

Disease	**Treatment**	**Resolved**	**Residual**
Abscess(N=54)	Needle Aspiration +Antibiotic Pigtail Catheterization+Antibiotic Needle+Pigtail +Antibiotic	13 29 3	6 0 3
Hydatid Cyst(N=16)	Open Surgery Laparoscopic- Deroofing PAIR Conservative	2 7 4 0	0 0 2 1
Simple Cyst(N=10)	Conservative	**Symptomatic** 1	**Asymptomatic** 9
Haemangioma (N=1)	Conservative	0	1
Primary HCC	Referred	-	-
Liver Mets (N=16)	 Surgery Palliative Treatment	**Deceased** 1 3	**Residual** 7 5

Table 6: Descriptive analysis of treatment outcome in the study population

Our study has some limitations, due to less number of cases of Hydatid cyst and primary HCC, sensitivity and specificity could not be assessed. Some clinically relevant patient and lifestyle information, such as smoking status, dietary habits and BMI were not available in the dataset. The generalization of findings to the Indian population is a concern.

VI. CONCLUSION:

Our study concludes that a direct proportionality was seen with the CT finding and USG finding. It also showed a strong correlation with cytological/ histological finding and USG finding. Future studies must be conducted in a large population to determine these advanced modalities. Our study may provide useful information and current reference for clinician and pathologist to understand theclinico-radiological spectrum as well as the differential diagnosis of space-occupying lesions.

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