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ANALYSIS OF LIVER ABSCESS- CONSERVATIVE VERSUS OPERATIVE MANAGEMENT

General Surgery

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ABSTRACT

BACKGROUND: Liver abscesses, both amoebic and pyogenic, continue to be an important cause of morbidity and mortality in tropical countries. India has the 2nd most burden of liver abscess amongst all other countries. We have determined etiopathology, clinical, radiological, and bacteriological characteristics of this condition and review its management strategies **AIMS AND OBJECTIVES:**To evaluate: demographic profile, etiology, clinical presentation, lab investigation and its management(Effectiveness of Conservative v/s Intervention: Needle Aspiration, Pigtail, Surgical Drainage) **MATERIALS AND METHODS:** This is an observational prospective study for presentation of liver abscess and its management done in the department of general surgery,VSGH and SVP Hospital , Ahmedabad , Gujarat, India from December 2017 and December 2019.

- Antibiotics alone (in uncomplicated abscess (>2cm & <5cm or of any size but difficult to approach or patient unfit for other modalities).
- USG guided Percutaneous aspiration,,Antibiotic coverage (in non-ruptured abscess >5cm or 250ml, easily approachable)
- USG guided Pigtail drainage, Antibiotics coverage (in non-ruptured abscess >10cm) and catheter was removed 24hrs after drain output was nil.
- Surgical drainage being used only in patients who fail to respond to above treatment.

KEYWORDS

Amoebic, Pyogenic, Liver Abscess, Percutaneous Drainage, Pigtail Catheter

INTRODUCTION:

Liver abscess has been recognized since Hippocrates (circa 400 B.C.) who speculated that the prognoses of the patients were related to the type of fluid within the abscess cavity [1] Liver abscess is found more commonly in men between 20 and 40 years of age, but can occur at any age. When multiple abscesses are present, pyogenic or mixed is the most probable type. Patients usually present with a constant dull pain (+/- fever) in the right upper quadrant of the abdomen which may be referred to the scapular region or the right shoulder. The primary mode of treatment of amoebic abscess is medical, however, as many as 15% of amebic abscesses may be refractory to medical therapy [2] . Also, secondary bacterial infection may complicate 20% of amebic liver abscesses [3] ,refractory amebic and in patients with pyogenic liver abscesses, aspiration and/or PIGTAIL drainage have been the traditional mode of treatment.

MATERIALS AND METHODS :

- Study size and period: 50 cases, Dec 2017-19
- Study conducted at: V.S.G.H& SVP Hospital Ahmedabad
- Antibiotics alone (in uncomplicated abscess (>2cm & <5cm or of any size but difficult to approach or patient unfit for other modalities).
- USG guided Percutaneous aspiration,,Antibiotic coverage (in non-ruptured abscess >5cm or 250ml, easily approachable)
- USG guided Pigtail drainage, Antibiotics coverage (in non-ruptured abscess >10cm) and catheter was removed 24hrs after drain output was nil.
- Surgical drainage being used only in patients who fail to respond to above treatment.
- Patient had ultrasonography(USG) done at the time of admission and the treatment procedure to be followed was decided based on USG findings.

PROCEDURE:

- All patients were started with Inj. Ceftriaxone 1gm IV 12 hrly and Inj.Metronidazole 400 mg IV 8 hrly.
- USG done: Ultrasonography was done on Day 1, 3, 7, 30 and when required. Relapses were noted and repeat aspirations were performed when necessary
- Needle aspiration Guidelines :-abscess size >5 cm or>65cc volume. -Pig Tail Catheter drainage Guidelines: abscess size >8 cm or >120 cc volume.
- Cure was defined as improvement clinically with subsidence of fever, and local signs, symptoms, decrease in WBC count and follow-up ultrasonography showed reduction in size < 3 cm in diameter and no evidence of relapses.

INCLUSION CRITERIA: Patients included in the study were: -Patients with USG abdomen is s/o Liver abscess. -Patients who gave consent for operative intervention, whenever required.

EXCLUSION CRITERIA: Patients who were excluded were: -Patients in whom USG abdomen does not suggest presence of Liver abscess. - Patients younger than 18 years were also excluded from the study

FOLLOW UP OF PATIENTS AFTER GETTING DISCHARGED:

(Minimum period of 6 months) Once a week for one month Monthly for first 3 months Once after 3 months, for recurrent attacks or development of complications and to monitor the efficacy of the treatment given.

OBSERVATION:-

1) AGE DISTRIBUTION

AGE GROUP (IN YEARS)	NO. OF PATIENTS (n=50)	% OF PATIENTS
<20	0	0%
21-30	4	8%
31-40	5	10%
41-50	15	30%
51-60	18	36%
>61	8	16%
TOTAL	**50**	**100%**

-Age of the patients included in this study varied from 21-82 years. The highest incidence was noted in the age group of *51-60 years (36.0%) with a mean age of 55.6 years* which coincides with findings in other studies

Study	Age Group (in years)	Mean Age (in years)
Rajak et al[4]	2-72	35

Zerem et al[7]	22-75	51.2 + 14.4
Antonio Giorgio et al[8]	16-86	45.3
Khan et al[9]	-	43 + 17
Present Study	**21-82**	**55.6**

2) GENDER DISTRIBUTION

GENDER	NO. OF PATIENTS (n=50)	% OF PATIENTS
MALE	44	88%
FEMALE	06	12%
TOTAL	**50**	**100%**

The present study shows high incidence of liver abscess in male seen 44 patients (88%) and 6 females (12%). Similar findings were found in other studies with male incidence male incidence being 76% [4], 90% [5] and 80% [10]

STUDY	MALE	FEMALE
RAJAK ET. AL [4]	76%	24%
SHYAM MATHUR ET. AL [5]	90%	10%
MANGUKIYA ET AL [10]	80%	20%
PRESENT STUDY	**88%**	**12%**

3) CHIEF PRESENTING COMPLAINT

CHIEF COMPLAINT	NO. OF PATIENTS (n=50)	% OF PATIENTS
RHC PAIN	35	70%
EPIGASTRIC PAIN	12	24%
GENERALISED PAIN	3	6%
FEVER	45	90%
DIARRHOEA	23	46%
VOMITING	19	38%
RESPIRATORY DISCOMFORT	10	20%

Abdominal pain was present in all cases (most studies. 4 patients has right hypochondriac + epigastric pain in common. Fever was the most consistent symptom occurring with abdominal pain in 45 cases (90%). Diarrhea occurring in 23 patients (46%) 10 patients (20%) presented with respiratory symptoms like cough, breathlessness

4) CLINICAL SIGN

SIGN	NO. OF PATIENTS (n=50)	% OF PATIENTS
ABDOMINAL	42	84%
FEVER (>101F)	6	12%
HEPATOMEGALY	39	78%
ICTERUS	7	14%
PALLOR	12	24%

- Rajak et al [11] in their study done in 1998 only four clinical parameters. These include fever, pain abdomen, tenderness and jaundice.
- Present study differed from other studies discussed above in having higher incidence of history of diarrhea and hepatomegaly combined with icterus on clinical examination.

	Rajak et al [4]	Yoo et al [11]	Mangukiya et al [10]	Present Study
SYMPTOMS				
ABDOMINAL PAIN	100%	85%	97%	92%
FEVER	96%	71%	74%	90%
WEIGHT LOSS	-	24%	-	2%
DIARRHOEA	-	23%	6%	46%
SIGNS				
TENDERNESS	86%	88%	95%	84%
FEVER	-	93%	74%	12%
HEPATOMEGALY	-	41%	26%	78%
ICTERUS	12%	7%	11%	14%
PALLOR	-	-	14.5%	24%

5) ASSOCIATED FACTORS IN PAST HISTORY

ASSOCIATED FACTOR	NO. OF PATIENTS (n=50)	% OF PATIENTS
ALCOHOL INTAKE	13	26%
DIABETES MELLITUS	16	32%
NO ASSOCIATED FACTOR	21	42%

6) LAB INVESTIGATIONS

CATEGORY	Hb (G/dl)		S.ALP (U/L)		SGPT (U/L)		PT (SECONDS)		S.ALBUMIN (G/dl)	
A	>10	<10	>150	<150	>49	<49	>15	<15	>2	<2
B	38(76%)	12(24%)	32(64%)	18(36%)	19(38%)	31(62%)	35(70%)	15(30%)	47 (94%)	3(6%)

LEUCOCYTE COUNT (WBC)

CATEGORY	WBC (/mm3)	NO. OF PATIENTS (n=50)	% OF PATIENTS
A	<10000	13	26%
B	10001-15000	17	34%
C	15001-20000	12	24%
D	>20000	8	16%
TOTAL		50	100%

- Elevated prothrombin time was seen in 70% (35 patients) of cases higher than other studies.

Altered Investigation	Yoo et al [11]	Mangukiya et al [10]	Yeoh et al [6]	Present Study
Haemoglobin (<10)	23%	41.5%	-	24%
Leucocytosis (>10000)	83%	78%	90%	74%
Total Bilirubin (>2)	22%	12.5%	17%	14%
S. ALP (>150)	83%	-	80%	64%
PT (>15)	14%	34.5%	-	70%

7) SITE IF LIVER ABSCESS

LOBE INVOLVED	NO. OF PATIENTS (n=50)	% OF PATIENTS
RIGHT LOBE	39	78%
LEFT LOBE	8	16%
BILATERAL LOBE	3	6%
TOTAL	50	100%

Lobe involved	Rajak et al[4]	Yoo et al[11]	Mangukiya et al [10]	Present Study
Right Lobe	68%	69%	83%	78%
Left Lobe	14%	20%	4.5%	16%
Bilatreral Lobe	18%	11%	12.5%	6%

Pigtail catheter was kept in situ for an average of 13.6 days with range of 5 to 30 days.

PERCUTANEOUS TREATMENT

- Rajak et al [4] compared percutaneous needle aspiration (PNA) and Percutaneous catheter drainage (PCD) in a randomized study involving 50 patients with liver abscess. Those investigators concluded that PCD was more effective than percutaneous needle aspiration
- In our study, we considered a third unsuccessful attempt at percutaneous needle aspiration failure of treatment. That only one of 35 aspirations required more than three attempts confirmed that further needle aspiration is rarely successful. This result supported the design of the study by Rajak et al [4].
- The results of our study confirmed that repeated percutaneous needle aspiration and PCD are equally efficient in the management of liver abscesses.

8) NUMBER OF ATTEMPTS OF ASPIRATION

Number Of Attempts	No. Of Patients (n=35)	% Of Total Patients
1	6	12%
2	13	26%
3	15	30%
>3	1	2%
Total	**35**	**70%**

- Thick viscous pus was the main reason for repeat aspirations.

9) NUMBER OF CASES OF CATHETER DRAINAGE

CATHETER DRAINAGE	NO. OF PATIENTS (n=14)	% OF TOTAL PATIENTS
TOTAL	14	28%

- Pigtail catheter was kept in situ for an average of 13.6 days with range of 5 to 30 days.

10) OPEN DRAINAGE PROCEDURES

PROCEDURE	NO. OF PATIENTS (n=7)	% OF TOTAL PATIENTS
LAPAROTOMY	3	6%
ICD INSERTION	3	6%
I & D	1	2%
TOTAL	7	14%

- Three of the percutaneously treated group required surgical drainage due to viscous Abscess contents and their ruptures
- I & D was done in 1 patient with subcutaneous extension of liver abscess.
- ICD insertion was done in 3 patients with intra thoracic rupture of liver abscess

11) DIAGNOSIS

DIAGNOSIS	NO. OF PATIENTS (n=50)	% OF PATIENTS
AMOEBIC LIVER ABSCESS	28	56%
PYOGENIC LIVER ABSCESS	20	40%
TUBERCULAR ABSCESS	1	2%
INDETERMINATE ABSCESS	1	2%
TOTAL	50	100%

The study coincides with overall study done by Rajak et al [4] and Yeoh et al[6] in most of the indices except in the overall incidence of ameobic liver abscess and pyogenic liver abscess, pointing towards the geographical location and its effect on the study.

12) MORTALITY ASSOCIATED WITH LIVER ABSCESS

OUTCOME	NO. OF PATIENTS (n=50)	% OF PATIENTS
SUCCESFULLY TREATED	47	94%
MORTALITY	3	6%
TOTAL	50	100%

- Mortality Rate in the present study was 6% (3 patients). Sepsis remained the cause of death in all three cases
- Most of the study done previously shows different mortality rates.

a) Yoo et al [11] had 11% mortality rate in their study.
b) Tan et al [14] showed mortality in their study to be 3.8%.
c) Mangukiya et al [10] had 1.5% mortality rates in their study.

CONCLUSIONS

- Advances of interventional radiology have influenced management of liver abscess. In case of liver abscess,
- Conservative (antibiotics only) management is tried in all cases of liver abscesses as initial therapy, continued in those who are improving or are not fit for operative intervention or not giving consent for operative intervention. Percutaneous needle aspiration (PNA) under USG guidance is minimally invasive and readily acceptable to most of the patients and easy to perform and with very rare complications. Less medical or nursing care is required with shorter hospital stay and negligible morbidity and no mortality. Only disadvantage is in very large abscesses (>8cm) repeated aspirations are required and in cases of thick and loculated collection it may fail. Though it can be used as initial line of management.
- Percutaneous pigtail catheter drainage (PCD) of abscess under USG guidance is better in larger abscesses which are partially liquefied or with thick pus. It is safe , effective and minimally invasive procedure with less morbidity and no mortality. The disadvantage is that the patient had longer duration of hospital stay. This technique also requires expertise and is costlier than percutaneous aspiration.
- Open/ laparoscopic surgical drainage of abscess is reserved for those who are not benefited by the above modalities. There is no significant difference in cavity resolution rate, so both percutaneous procedures could be used with equal efficacy in properly selected cases.

Minimal surgical interventions like PCD and PNA along with conservative treatment is better than Only conservative treatment for the management of liver abscesses of size >5 cm, in terms of duration to attain clinical relief and duration for which parenteral antibiotics are needed.

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