

CLINICAL PROFILE AND MANAGEMENT OF LIVER ABSCESS BY USG GUIDED ASPIRATION IN COMBINATION WITH ANTIBIOTICS AND SURGERY: A CLINICAL STUDYAmit Ojha¹, Shaleen Tiwari²**HOW TO CITE THIS ARTICLE:**

Amit Ojha, Shaleen Tiwari. "Clinical Profile and Management of Liver Abscess by USG Guided Aspiration in Combination with Antibiotics and Surgery: A Clinical Study". Journal of Evolution of Medical and Dental Sciences 2014; Vol. 3, Issue 22, June 02; Page: 6105-6118, DOI: 10.14260/jemds/2014/2710

ABSTRACT: Liver abscess could be amoebic, pyogenic, infected hydated, traumatic or ascaridal. Amoebic liver abscess follows 1-2months after amoebic dysentery due to invasion of liver by Entamoeba Histolytica via portal circulation. The study was taken by considering the following aims and objectives: Evaluation of clinical symptoms and signs of liver abscess. To evaluate the best modality of management of liver abscess. To evaluate the common microbiological organism responsible for liver abscess. Evaluation of mortality of liver abscess and its survival rate. This study was carried out in the Department of Surgery, G.R. Medical College and J.A. Group of Hospitals, Gwalior between July 2006 to October 2007. Total of 73 cases of liver abscess were included in the study. From our study of liver abscess, it was concluded that if the diagnosis of the liver abscess was made early, the survival of patients was good. The modern day ultrasound and other non-invasive imaging techniques had greatly revolutionized the diagnosis of the liver abscess. Out of the different treatment modalities for the liver abscesses, the main stay of treatment in both amoebic and pyogenic liver abscesses was antibiotics with USG guided percutaneous needle aspiration. If abscess cavity was larger and filling repeatedly, continuous drainage of liver abscess with Pig tail catheter along with antibiotics was required. In very few patients where aspiration could not be possible due to thick pus, septed cavity of abscess, and loculated abscess or there was rupture of abscess in any body cavity it was managed with open surgical drainage.

KEYWORDS: Liver abscess.

INTRODUCTION: Liver abscess could be amoebic, pyogenic, infected hydated, traumatic or ascaridal. Amoebic liver abscess follows 1-2months after amoebic dysentery due to invasion of liver by Entamoeba Histolytica via portal circulation.⁽¹⁾

The pyogenic liver abscess may be single or multiple and may involve right or left lobe, though it is more in right lobe. The organisms commonly seen in pyogenic liver abscess are Staphylococcus Aureus, Streptococcus Pyogenes and E. Coli.⁽²⁾

Hydatid liver abscess can occur as a complication of hydatid cyst secondary to invasion by pyogenic organisms following rupture of cyst into biliary passages. As cardinal liver abscess is a serious complication of wandering ascaris. Conditions like achlorhydria, antihelminthic treatment and rise of hosts temperature cause migration of ascaris from alimentary system to biliary tract with resultant cholangitis and liver abscess.^(2,3)

In the pre-antibiotic era, the picture was of spiking fever and upper quadrant pain, often with prostration and shock. Now a days the presentation is less acute with malaise, low grade fever and dull abdominal pain increased by movement. It is particularly likely to be occult in elderly.

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Ultrasonography and CT scan are the most useful investigations for earlier diagnosis of liver abscesses. It is also useful for therapeutic purpose. Due to the advances in the radiology, treatment modality of liver abscesses is USG/CT guided percutaneous aspiration or percutaneous catheter drainage under cover of antibiotics.^(2,4)

Treatment modalities are - Conservative treatment with antibiotics, percutaneous needle aspiration with antibiotics, percutaneous catheter drainage with antibiotics and open surgical drainage.⁽⁴⁾

Each treatment modality varies according to the type, solitary or multiple, amoebic or pyogenic, complicated or uncomplicated liver abscesses.

All the treatment modalities which are used to treat these cases, none of them are free of side effects. Every modality has its own pros and cons and to treat the liver abscess with just only one modality cannot be proven very effective, hence > 1 modality are used.⁽⁴⁾

In old days, open surgical drainage was done but with improvement in USG and CT, noninvasive recognition of liver abscess done accurately. USG guided needle aspiration and subsequent percutaneous catheter drainage has provided means of non-operative management.^(5,6)

Under cover of antibiotics/amoebicidal drugs, percutaneous needle aspiration or percutaneous catheter drainage are done now a days.

Open surgical drainage is indicated in case of ruptured liver abscess.⁽⁵⁾

AIM & OBJECTIVES: The study was taken by considering the following aims and objectives:

1. Evaluation of clinical symptoms and signs of liver abscess.
2. To evaluate the best modality of management of liver abscess.
3. To evaluate the common microbiological organism responsible for liver abscess.
4. Evaluation of mortality of liver abscess and its survival rate.

MATERIAL AND METHODS: This study was carried out in the Department of Surgery, G.R. Medical College and J. A. Group of Hospitals, Gwalior between July 2006 to October 2007. Total of 73 cases of liver abscess were included in the study. The study was carried out with the help of following material and methods.

MATERIALS:

1. Portable ultrasound unit: All the procedures were performed with real time ultrasound guidance. Toshiba's just vision 400 with multiple plain imaging sector transducer of 3.5 MHz - 7.5 MHz and the latest, Toshiba's NEMIO 30 with multiple transducers of 3.5 MHz - 12 MHz.

2. Aspiration needles:

- Jelco no. 16 G.
- Intracath no. 16G.
- Spinal needle 20 G. 21G.
- Pigtail catheter of 8 F and 12 F
- Feeding tube

3. Trolley settings: Eye towel, sponge holder

- Aspiration needle (depending upon the need)
- Two 20ml syringes
- Sterile bottles
- Sterile gloves
- Kidney tray
- Iodine, spirit for cleaning local parts
- Savlon, povidone-iodine, spirit.
- Sterile pads and gauze pieces
- Sticking plaster.

4. Antibiotics

- Injection Ciprofloxacin
- Injection Ceftriaxone
- Injection Metronidazole
- Tab. Ciprofloxacin
- Tab. Metronidazole

METHODS: Diagnosis of liver abscess was done with the help of clinical examination, x-ray and was confirmed by ultrasonography. In some patients CT scan was used.

After confirmation specific antibiotic was started and if needed percutaneous ultrasound guided needle aspiration done. In some patients ultrasound guided catheter drainage done. In some patients open surgical drainage done.

The diagnosis of amoebic liver abscess was made, if aspirated pus had a typical anchovy sauce color and was odorless, bacteriologically sterile. Additional criteria used were the clinical features, past history of amoebic dysentery and demonstration of *Entamoeba Histolytica* in stool.

A pyogenic liver abscess was defined as an acute or chronic abscess. They were usually multiple. Pus aspirated was purulent and yellowish or yellowish green colored.

Routine investigations were done for all patients; chest x-ray was done to note any pulmonary complications in terms of elevation of diaphragm and pleural effusion.

Aspirated pus was sent for culture and sensitivity.

Indications for aspiration or drainage of abscess are:

1. Lack of improvement with subsidence of symptoms and signs in 48-72 hrs.
2. Left lobe abscess
3. Compression lesion - A posteriorly located amoebic liver abscess may present with inferior vena cava obstruction.
4. Abscess size more than 6 cm.
5. Multiple liver abscess
6. Presence of jaundice due to large abscess or abscess at porta hepatis.

The regression of abscess size was evaluated on ultrasonography and if needed repeated aspiration were done.

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All patients of amoebic liver abscess were given antibiotics as under:

- Inj. Ciprofloxacin 200mg BD IV
- Inj. Metronidazole 500mg TDS IV initially and followed orally.

All patients of pyogenic liver abscess were given antibiotics as under -

- Inj. Ceftriaxone 1gm. BD IV.
- Inj. Metronidazole 500mg TDS IV initially and followed orally.

After discharge, oral metronidazole was continued for 2-3 weeks depending on the regression of size of abscess on ultrasound examination.

Follow-up was kept on 3days, 7days, 15days and 21days from the day of admission or initiation of treatment. Abscesses were noted for size and residual volume and liquefaction. If needed again USG guided percutaneous needle aspiration was done, and added with antibiotics.

Pre-aspiration procedures/requisites:

1. Written consent of the patient/guardian (if the patient is a minor)
2. Base line investigations like haemogram, urine – albumin and sugar.
3. Coagulation profile of the patient.
4. Standby anaesthetist.
5. Setting up of secure IV line.
6. Availability of emergency tray.
7. Premedication.
 - Presence of needle in the abscess cavity was confirmed by giving way sensation, scanning needle tip echo, and the free flow of pus.
 - Stellate was removed and a syringe was applied. Pus sample was collected in a sterile specimen bottle for microscopy and culture sensitivity and the pus was drained till the cavity collapsed (as confirmed by ultrasound) or till no more pus was aspirated.
 - In this study we have kept an indwelling drainage tube in some patients. The criteria for selection of these patients were:
 1. Communicating abscesses or irregular cavities where dependent drainage of each abscess individually was not possible.
 2. Large collection > 500 ml.
 3. Thick/Viscous pus content of the cavity which was not amenable for aspiration.

For the purpose a guide wire was passed through the cannula and the cannula was removed than with the help of dilators (those used for percutaneous nephrostomy), the tract was dilated by serially passing the dilator over the guide wire and then a pigtail catheter or feeding tube (according to need) was kept in the abscess cavity. The drainage catheter was properly secured in its place and connected to a collecting system.

- Intracath, pigtail catheter were also used in this study wherever deemed necessary. Injection atropine 0.6mg I.M, injection Diazepam 5-10 mg I.M. is used. Monitoring of vital signs prior and during the procedure was done.

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Technique:

- Depending upon the abscess to be drained the patient was given appropriate position.
- Intravenous line was set up.
- The appropriate part of the abdomen was cleaned thoroughly with savlon, betadine and spirit. The cleaned part was then draped.
- The transducer probe was covered with a sterile glove.
- The abscess cavity was located and approach route decided, avoiding important structures, a direct easily accessible and a safe path was chosen.
- Depth of the abscess from skin, appropriate angle of the approach and the exact site of puncture was determined.
- Local anaesthesia with 2% xylocaine was given to raise small wheal and then at the site of puncture a small cut was given on the skin with help of scalpel.
- The patient was asked to hold his breath and the Jelco needle along with trocar was passed towards the abscess cavity with the predetermined angle and up to the predetermined depth.
- In those cases where an indwelling catheter (drainage tube) was kept, the decision to remove the drain was taken whenever there was no drain for at least 24 hours or when ultrasonography revealed no significant residual collection.

Post procedural Precautions:

- The patient were kept NBM (Nil by Mouth) for further 6 hours.
- Intravenous fluid.
- Watch for signs of peritonitis.
- TPR/BP charting.
- Systemic antibiotics.
- Analgesic SOS.

Follow up ultrasound after three days for size of abscess cavity (Residual volume) and echogenicity of abscess cavity.

Follow up was kept in all cases.

OBSERVATION: The following table [table-1] shows the age wise distribution of patients of liver abscess. In this the youngest patient was 21/2 year old and oldest patient was 70 years old. The highest incidence of liver abscess was found in 4th decade [32.8%] followed by 5th decade [23.2%], 3rd decade [16.4%] and 6th decade [12.3%]

Sl. No.	Age Group	No. of Patients	Percentage
1	0-10 yrs.	2	2.7
2	11-20 yrs.	3	4.1
3	21-30 yrs.	12	16.4
4	31-40 yrs.	24	32.8
5	41-50 yrs.	17	23.2
6	51-60 yrs.	9	12.3
7	61-70 yrs.	6	8.2
	Total	73	100

Table 1: Age-wise distribution

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Sex: The Table-2 shows the sex wise distribution in the patients of liver abscess. The disease was more common in males than females i.e. the affected males were 63 and females were 10 with the ratio of 86.3% and 13.6% respectively.

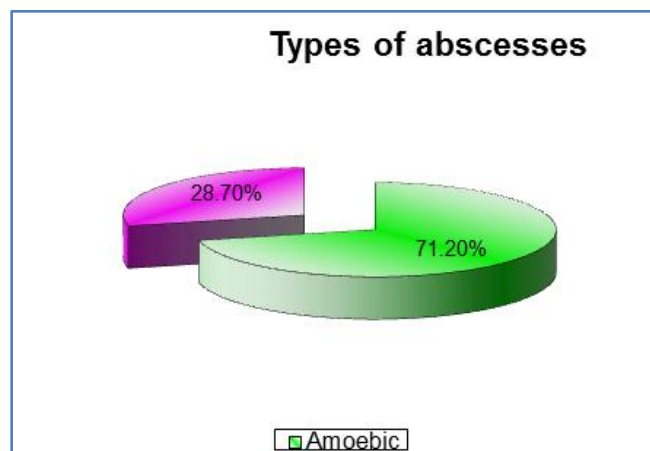
Sl. No.	Sex	No. of Patients	Percentage
1	Male	63	86.3%
2	Female	10	13.6%

Table 2: Sex wise distribution

The Table-3 shows the type of abscesses found during study among which the amoebic liver abscess accounts for 52[71.2%] and the pyogenic liver abscess were 21[28.7%].

Sl. No.	Type of abscesses	No. of patients	Percentage
1	Amoebic	52	71.2%
2	Pyogenic	21	28.7%

Table 3: Types of Liver abscesses



Clinical Features:

1. Symptoms: The Table-4 shows various symptoms in patients of all types of liver abscesses. Pain was present in all patients. Fever was present in 68 patients[93.1%], anorexia was present in 46 patients[63.0%], malaise was present in 29 patients[39.7%], weight loss and diarrhea was present in 10 patients each[30.1%], other symptoms like nausea and vomiting and cough were less common.⁽⁷⁾

Sl. No.	Symptoms	No. of patients	Percentage
1.	Pain	73	100
2.	Fever	68	93.1
3.	Nausea & Vomiting	17	23.2
4.	Anorexia	46	63.0
5.	Weight loss	42	30.1

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6.	Malaise	29	39.7
7.	Cough	10	13.9
8.	Diarrhea	22	30.1

Table 4: Symptoms in all Liver abscesses

The Table-5 shows symptoms in patients of pyogenic liver abscess. Pain and fever was present in all patients and other symptoms like anorexia, malaise, nausea and vomiting, weight loss, cough and diarrhea were less common.⁽⁷⁾

Sl. No.	Presenting complaints	No. of patients	Percentage
1.	Pain	21	100
2.	Fever	21	100
3.	Nausea & Vomiting	5	23.8
4.	Anorexia	14	66.6
5.	Weight loss	5	23.8
6.	Malaise	9	42.8
7.	Cough	2	9.5
8.	Diarrhoea	2	9.5

Table 5: Symptoms in Pyogenic Liver Abscesses

The Table-6 shows symptoms in patients of amoebic liver abscess. Pain was present in all patients whereas fever was present in 47[90.3%] patients. This was then followed by anorexia in 37[71.1%] patients, malaise in 20[38.4%] patients, diarrhea in 20[38.4%] patients, weight loss in 17[32.6%] patients, nausea and vomiting in 12[23.03%] patients, and cough in 7[13.4%] patients.^(6,7)

Sl. No.	Symptoms	No. of patients	Percentage
1.	Pain	52	100
2.	Fever	47	90.3
3.	Nausea & Vomiting	12	23.03
4.	Anorexia	37	71.1
5.	Weight loss	17	32.6
6.	Malaise	20	38.4
7.	Cough	7	13.4
8.	Diarrhoea	20	38.4

Table 6: Symptoms in Amoebic liver abscesses

Signs: The Table-7 shows the signs which were present in patients of all types of liver abscesses. Abdominal tenderness was present in 68[93.3%] patients, then hepatomegaly which was present in 24[33.3%] patients and then the other signs like jaundice in 7[10%] patients, respiratory signs in 7[10%] patients and intercostal tenderness in 2[3.33%] patients.⁽⁷⁾

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Sl. No.	Signs	No. of patients	Percentage
1.	Hepatomegaly	24	33.3
2.	Abdominal tenderness	68	93.3
3.	Intercostal tenderness	2	3.33
4.	Jaundice	7	10
5.	Respiratory signs	7	10

Table 7: Signs in all liver abscesses

The following Table-8 shows the signs in patients of pyogenic liver abscesses. Abdominal tenderness was present in 16[76.1%] patients, hepatomegaly in 7[33.3%] patients followed by jaundice in 5[23.8%] patients, intercostal tenderness in 2[9.5%] patients and the respiratory signs were absent.⁽⁷⁾

Sl. No.	Signs	No. of patients	Percentage
1.	Hepatomegaly	7	33.3
2.	Abdominal tenderness	16	76.1
3.	Intercostal tenderness	2	9.5
4.	Jaundice	5	23.8
5.	Respiratory signs	0	0

Table 8: Signs in pyogenic liver abscesses

The following Table-9 shows the signs which were present in the patients of amoebic liver abscesses. Abdominal tenderness was present in 50[96.1%] patients, hepatomegaly in 17[32.6%] patients, respiratory signs in 7[5.7%] patients and jaundice in 2[3.8%] patients. The intercostal tenderness was absent in these patients.

Sl. No.	Signs	No. of patients	Percentage
1.	Hepatomegaly	17	32.6
2.	Abdominal tenderness	50	96.1
3.	Intercostal tenderness	0	0
4.	Jaundice	2	3.8
5.	Respiratory signs	7	5.7

Table 9: Signs in Amoebic liver abscesses

Thus the signs of the abdominal tenderness and respiratory signs were more common in patients of amoebic liver abscess and intercostal tenderness and jaundice were more common in patients of pyogenic liver abscesses.⁽⁷⁾

Radiological Investigation:

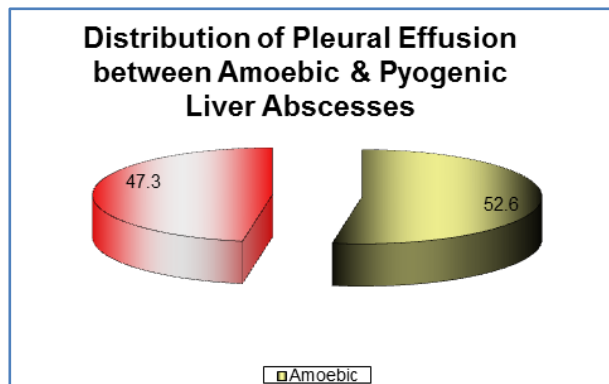
- 1. Chest X-rays:** All patients with hepatic abscess had undergone chest X-ray evaluation. There were 19 patients who had pleural effusion mostly on the right side.

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The following Table-10 shows the distribution of pleural effusion between the patients of amoebic and pyogenic liver abscesses and it suggests that pleural effusion was more common in patients of amoebic liver abscess than pyogenic liver abscess in the ratio of 52.6% Vs. 47.3% respectively.

Sl. No.	Type of abscess	No. of patients	Percentage
1.	Amoebic	10	52.6
2.	Pyogenic	9	47.3

Table 10: Distribution of Pleural effusion, between Amoebic & Pyogenic Liver Abscesses



2. Ultrasonography:

A. Lobes of Liver affected: Ultrasonography of all patients was done. Diagnosis was confirmed by this method. Exact site of abscess was known.

The following Table-11 shows the lobe wise distribution in patients of all the liver abscesses. It shows that right lobe was more commonly involved i.e. in 57[78%] patients, left lobe involvement was in 10[13.6] patients and both lobes were involved in only 6[3.2%] patients.⁽⁸⁾

Sl. No.	Lobe wise	No. of patients	Percentage
1.	Right lobe	57	78
2.	Left lobe	10	13.6
3.	Both lobes	6	3.2

Table 11: Lobe wise distribution in all liver abscesses

The following Table-12 shows the lobe wise distribution of patients of amoebic liver abscess. Right lobe was involved in 43[58%] patients, left lobe in 7[9.5%] patients and both lobes were involved in 2[2.7%] patients.⁽⁸⁾

Sl. No.	Lobe wise	No. of patients	Percentage
1.	Right lobe	43	58
2.	Left lobe	7	9.5
3.	Both lobes	2	2.7

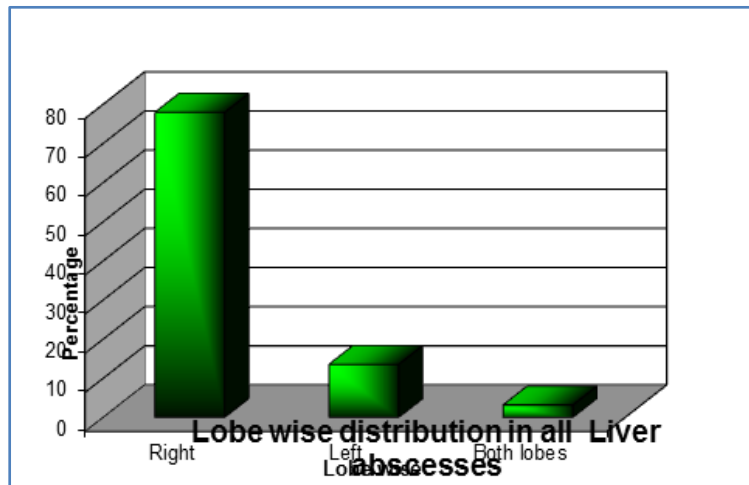
Table 12: Lobe wise distribution in Amoebic liver abscess

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The following Table-13 shows the lobe wise distribution of patients of pyogenic liver abscess. It shows that the right lobe was involved in 14[19.1%] patients, left lobe in 3[4.1%] patients and both lobes were involved in 4[5.4%] patients.⁽⁸⁾

Sl. No.	Lobe wise	No. of patients	Percentage
1.	Right lobe	14	19.1
2.	Left lobe	3	4.1
3.	Both lobes	4	5.4

Table 13: Lobe wise distribution in Pyogenic liver abscess



The incidence of liver abscess in both lobes was more in patients of pyogenic liver abscesses (5.4%) than in patients of amoebic liver abscesses (2.7%).⁽⁹⁾

B. Number of abscesses present in liver: The following Table-14 shows the distribution according to the number of abscesses. Solitary abscesses were found in 56[76.7%] patients and multiple abscesses were found in 17[23.2%] patients.

Sl. No.	No. of abscesses	No. of patients	Percentage
1.	Solitary	56	76.7
2.	Multiple	17	23.2

Table 14: Distribution according to number of abscesses in Liver

The following Table-15 shows the distribution of amoebic and pyogenic liver abscesses according to the number of abscesses. Solitary abscesses were more in amoebic variety than the pyogenic one i.e. 84.6% and 57.1% respectively whereas multiple abscesses were more common in pyogenic variant than the amoebic one i.e. 42.8% and 15.3% respectively.⁽¹⁰⁾

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Sl. No.	No. of abscesses	Amoebic Liver abscess		Pyogenic Liver abscess	
		No. of patients	%	No. of patients	%
1.	Solitary	44	84.6	12	57.1
2.	Multiple	8	15.3	9	42.8

Table 15: Distribution of Amoebic & pyogenic liver abscesses according to the number of abscesses

Bacteriological observation: The following Table-16 shows the distribution according to the organisms found from the pus which was aspirated and sent for culture. The pus was found sterile in 45[75%] patients, Staphylococci was found in 7[11.6%] patients, Pseudomonas was found in 5[8.3%] patients and E. Coli was found in 3[5%] patients.

Sl. No.	Organism	No. of patients	Percentage
1.	E. coli	3	5
2.	Staphylococci	7	11.6
3.	Pseudomonas	5	8.3
4.	Sterile	45	75

Table 16: Distribution according to the organisms found

Most of the pus samples were sterile while Staphylococci was more common than Pseudomonas and E. coli.

Type of treatment given: The following Table-17 shows the treatment given to the patients depending on the size of abscesses and volume of the abscesses in four ways. Most of the patients i.e. 39(53.4%) patients were treated by both antibiotics and USG guided percutaneous needle aspiration. All patients recovered.^(9,10)

13(17.8%) patients were given only antibiotics and anti-amoebic, 11 patients recovered and 2 patients died.

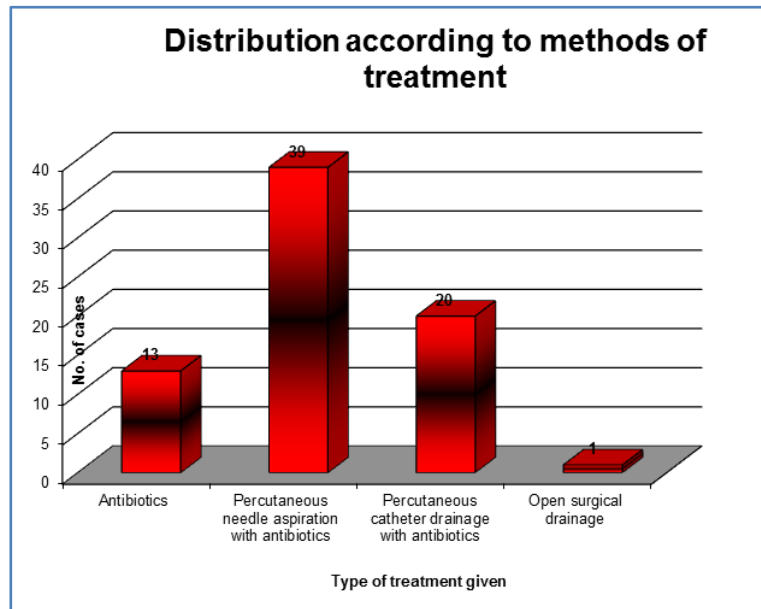
20(27.3%) patients were treated with both antibiotics and USG guided percutaneous catheter drainage. 18 patients recovered and 2 patients died.

1(1.3%) patient required open surgical drainage and the patient survived.

Total number of patients died were 4.

Sl. No.	Type of treatment given	No. of patients	Percentage
1.	Antibiotics	13	17.8
2.	Percutaneous needle aspiration with antibiotics	39	53.4
3.	Percutaneous catheter drainage with antibiotics	20	27.3
4.	Open surgical drainage	1	1.3

Table 17: Distribution according to methods of treatment



Hospital Stay: The following Table-18 shows the distribution of patients according to their stay (in days) in the hospital. Majority of the patients i.e. 35(47.9%) patients were required to stay in hospital for 8 to 15 days.

Few patients (9.5%) were required to stay for more than 21 days and only few patients were required to stay for 0-3 days.

Sl. No.	No. of days	Percentage	No. of patient
1.	0-3 days	8.2	6
2.	3-7 days	20.5	15
3.	8-15 days	47.9	35
4.	16-21 days	13.6	10
5.	>21 days	9.5	7

Table 18: Distribution of patients according to stay (days) in hospital

Follow up after 21 days: The patients who came for follow up all underwent USG. Total 49 patients followed & 15 were failure for follow up. In all follow up patients, abscess cavity was resolved after 21 days.

RESULTS: Study was carried out in the Department of Surgery, G.R. Medical College, and J.A. Group of hospitals, Gwalior between July 2006 to October 2007. Total of 73 cases of liver abscess were included in the study and following were the summary and conclusion:

1. Amoebic liver abscesses were more common than pyogenic liver abscesses. The ratio of amoebic to pyogenic liver abscess was 2.4:1 (52 patients of amoebic liver abscess and 21 patients of pyogenic liver abscess).
2. Liver abscesses were more common in 4th decade followed by 5th decade.

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3. Liver abscesses were more common in males than females; male to female ratio was 6.2:1 (63 males and 10 females).
4. Anorexia (63%), fever (93%) and pain (100%) in right hypochondrium were the most common presentation in our study.
5. The other symptoms present were loss of weight, diarrhoea and nausea & vomiting in descending order.
6. Intercostal tenderness was present in 3.33% of patients. Jaundice and respiratory signs were present in 10% of patients.
7. Pleural effusions were detected in 19 patients (26%) on chest radiographs mostly on the right side.
8. Right lobe (78%) of liver was more commonly affected than the left lobe (10%) in both pyogenic and amoebic liver abscess. Both lobes were affected in only 6% of patients.
9. Solitary abscesses were more than multiple abscesses. Solitary abscesses were 76.7% and multiple abscesses were 23.2%.
10. In amoebic liver abscesses, solitary abscesses (84.6%) were more than pyogenic liver abscess (57.1%).
11. In pyogenic liver abscesses, multiple abscesses (42.8%) were more than amoebic liver abscesses (15.3%).
12. The pus culture was positive in only 25% of the patients. Among the positive culture, the Staphylococci, Pseudomonas and E coli were the most common organisms seen.
13. 39(53.4%) of the patients were treated with percutaneous needle aspiration with antibiotics. 20(27.3%) of patients were treated with percutaneous catheter drainage(pig tail catheter drainage) with antibiotics. 13(17.8%) of patients were treated with antibiotics alone and only in 1(1.3%) of the case open surgical drainage was done.
14. Over all hospitalization of patients of liver abscess was for 8 to 15 days in majority of patients. Few required to stay for 21 day or more.
15. In amoebic liver abscesses, initially anchovy sauce pus was aspirated, but in 2nd or 3rd aspiration pus was yellowish due to secondary infection.
16. Out of the 26% of patients who had pleural effusion, none of them required intercostal drainage or pleural tapping or aspiration.
17. One patient was admitted twice, required secondary percutaneous needle aspiration and antibiotics after review of 21 days having same size of abscess cavity.
18. The best modality of treatment was antibiotics with percutaneous needle aspiration. It was used as a first line of treatment of liver abscesses.
19. Open surgical drainage was required only in few cases where rupture of liver abscess occurred in peritoneal cavity and patient developed peritonitis.
20. Over-all mortality was 5.4% i.e. 4 patients.
21. There was no mortality in the patients treated with percutaneous needle aspiration with antibiotics.

CONCLUSION: From our study of liver abscess, it was concluded that if the diagnosis of the liver abscess was made early, the survival of patients was good. The modern day ultrasound and other non- invasive imaging techniques had greatly revolutionized the diagnosis of the liver abscess. Out of

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the different treatment modalities for the liver abscesses, the main stay of treatment in both amoebic and pyogenic liver abscesses was antibiotics with USG guided percutaneous needle aspiration.

If abscess cavity was larger and filling repeatedly, continuous drainage of liver abscess with Pig tail catheter along with antibiotics was required. In very few patients where aspiration could not be possible due to thick pus, septed cavity of abscess, and loculated abscess or there was rupture of abscess in any body cavity it was managed with open surgical drainage.

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Date of Submission: 18/05/2014.
Date of Peer Review: 19/05/2014.
Date of Acceptance: 26/05/2014.
Date of Publishing: 31/05/2014.