

A COMPARATIVE STUDY OF CONSERVATIVE MANAGEMENT VERSUS ULTRASOUND GUIDED ASPIRATION OF SMALL AMOEBIC LIVER ABSCESS

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ABSTRACT

To compare the outcome of patients undergoing conservative management versus ultrasound guided aspiration of small amoebic liver abscess (≤ 200 ml). This observational prospective study was conducted on 60 patients, aged between 18 to 80 years, After confirming the diagnosis, patients were exposed to medical management or USG guided Aspiration. Patients coming for regular follow-up after completing treatment were included in the study. It was found that the majority of the patients were male (86.7%) and with mean age of the studied patients was 37.10 ± 12.66 years. Chief complaints were pain (100%) followed by fever (85.0%) and Nausea/Vomiting (48.3%) pallor (33.3%), icterus (25.0%) and Tenderness (16.7%). Majority of patients had the right lobe of the liver affected (93.4 %) with Single abscess (94.0%). Duration of Hospital stay and time of half reduction in size was significantly higher in conservative management than the USG guided Aspiration. Reoccurrence of abscess in conservative management was in 6 (20.0%) and need of Surgical intervention was in 4 (13.3%) patients while in USG guided Aspiration group only 1 (3.3%) patient shows Reoccurrence. No mortality was observed in our study. In the present study abscess containing volume of pus (<200 cc) was treated with either conservative treatment or USG guided Aspiration. Our data suggested that the USG guided Aspiration and conservative medical management in treatment of Amoebic liver abscess are almost equal.

KEYWORDS: Amoebic liver abscess (ALA) , Pyogenic liver abscess(PLA), Ultrasonography (USG), Enzyme-linked immunosorbent assay (ELISA)

INTRODUCTION

Hepatic or liver abscesses are infectious, space occupying lesions in the liver; the two most common abscesses being pyogenic and amoebic. Amoebiasis is the infection of the human gastrointestinal tract by *E histolytica*, a parasite that is capable of invading the intestinal mucosa and spreading to other organs, mainly the liver. If diagnosed early,¹ ALA is readily treatable and its mortality is negligible. When left untreated, it may lead to life-threatening complications such as rupture into the peritoneal, pleural, or pericardial cavity.² 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.³ The *Entamoeba* involves about 10% of world population; with only 10% of infected cases develop the clinical syndrome of amoebic manifestations.⁴ Approximately 60% are solitary and mainly located in the right lobe of the liver, Amoebic liver abscess occurs most commonly in the age group of 20-45 years. It is seven to nine times

more common in males than females.⁵ The diagnosis of Amoebic Liver Abscess is confirmed by ultrasonography (USG), serological tests such as indirect hem agglutination test, reddish brown (anchovy paste like material) aspirate from the abscess, negative gram stain, rapid resolution after metronidazole treatment. The diagnosis of Pyogenic liver Abscess is based on temperature chart, nausea, vomiting, anorexia, haematological analysis of leucocytosis, anaemia, and positive blood or aspirate culture for bacterial etiology.⁶ The standard treatment of liver abscess is the use of appropriate antibiotics and supportive care. Ultrasound guided needle aspiration is fairly safe, it is nonetheless an invasive procedure. Recently the role of percutaneous aspiration in the management of amoebic liver abscess has been doubted.⁷ Percutaneous placement of an indwelling catheter is the method most widely preferred to drain the large liver abscesses.⁸ USG guided percutaneous needle aspiration can improve response to antibiotic treatment in the management of amoebic liver abscesses. It needs further studies in cases of small amoebic liver abscesses to compare conservative

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alone versus needle aspiration with medical management. The present study was conducted to compare the outcome of patients undergoing conservative management versus ultrasound guided aspiration of small amoebic liver abscess and to observe the significant ($\geq 50\%$) reduction in size of liver abscess in patients managed conservatively. This study is to compare the outcome of patients undergoing conservative management versus ultrasound guided aspiration of small amoebic liver abscess ($\leq 200\text{ml}$) and to observe significant ($\geq 50\%$) reduction in size of liver abscess in patients managed conservatively.

MATERIAL AND METHOD

This prospective observational study was carried out in Department of Surgery at ELMC & Hospital, Lucknow on the patients who were visited to OPD or IPD of the department and clinically diagnosed with liver abscess. A total 60 small amoebic liver abscess (ALA) ($\leq 200\text{ml}$) patients who were found fit according to inclusion criteria were studied during the study period of 2 years. Patient having cirrhosis, hydatid cyst or sepsis were excluded. Patients were randomly divided into 2 groups by chit system and each group had 30 patients, one group patients were managed by conservative management (Group I) and second group patients were managed by USG guided needle aspiration method (Group II). Histories of all the patients were obtained like complete clinical examination, routine investigations were done. Five milli-litres (5ml) of blood was collected and centrifused to obtain the serum used for ELISA. The diagnosis of ALA (amoebic liver abscess) was confirmed by a positive enzyme-linked immunosorbent assay (ELISA) Kit-[KDR96770.1] and ultrasonographic (USG) evidence of liver abscess. At USG, the abscess was characterized by site (lobe), size (dimensions, recorded as the largest dimension of the cavity), number (one vs. multiple), distance from the liver capsule (measured from the liver capsule to the point of the abscess closest to it), vascular, and biliary structures. Metronidazole therapy was administered as an oral formulation 750 mg 3 times a day to all patients, irrespective of response or need for intervention, for a total of 10 days. Ultrasound-guided needle aspiration or pigtail catheter insertion was considered interventions.

RESULT

Below Table no.1 Majority of studied patients 20 (33.3%) were shows the pallor followed by icterus were 15 (25.0%), tenderness were 10 (16.7%), jaundice were 7 (11.7%) while hepatomegaly were only 3 (5.0%).

		Frequency (n=60)	Percentage
Age (Years)	18-30	21	35.0%
	31-40	20	33.3%
	41-50	11	18.3%
	>50	8	13.3%
	Mean \pm SD (Min-Max)	37.10 \pm 12.66 (18-80)	
Gender	Male	52	86.7%
	Female	8	13.3%
Clinical Symptoms of liver abscess	Abdominal pain	60	100.0%
	Fever	51	85.0%
	Chills	27	45.0%
	Nausea/ Vomiting	29	48.3%
	Anoxeria	24	40.0%
	Weight Loss	4	6.7%
	Others	4	6.7%
Clinical Signs of liver abscess	Pallor	20	33.3%
	Icterus	15	25.0%
	Tenderness	10	16.7%
	Hepatomegaly	3	5.0%
	Jaundice	7	11.7%

Table 1: Demographic Profile and Clinical Symptoms of Studied Patients

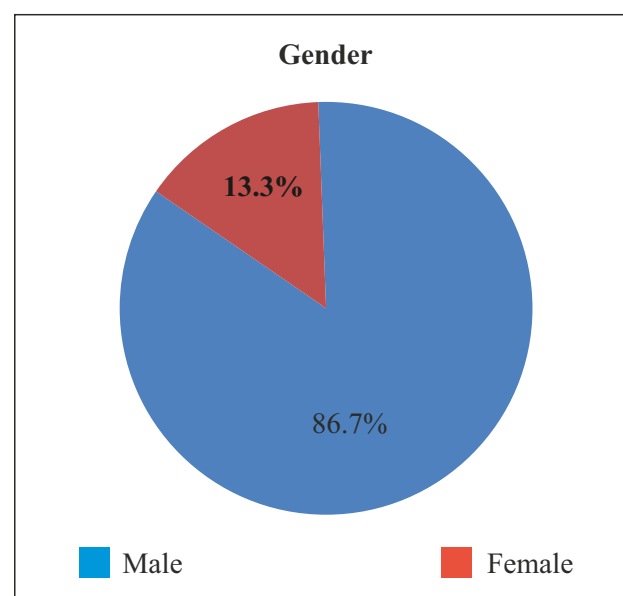


Fig.1 : Sex Wise Distribution in Studied Patients

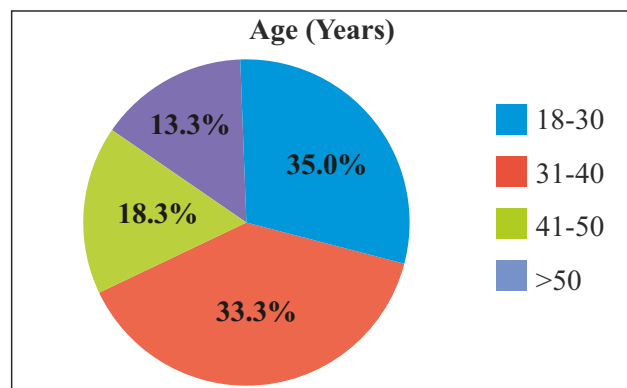


Fig. 2 : Age wise distribution in studied patients

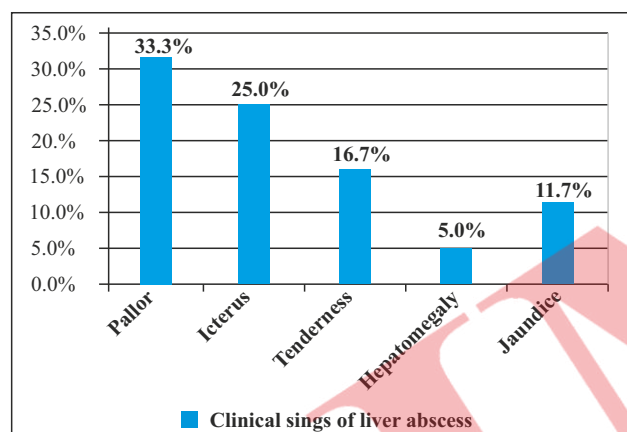


Fig. 3: Clinical Sign of Liver Abscess in Studied Patients

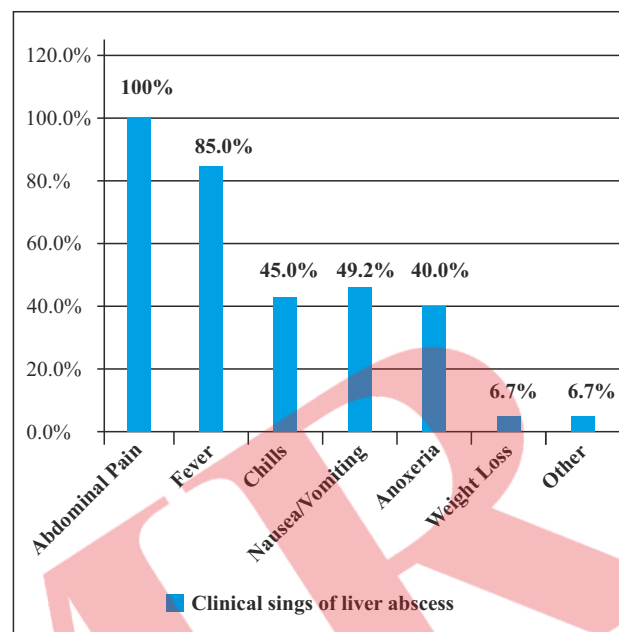


Fig. 4: Clinical Signs of Liver Abscess in Studied Patients

In below Table no.2 shows the volume of Liver Abscess before treatment and after treatment improvement in conservative and USG aspiration treatment and it was seen that the volume of the liver abscess reduces in both the groups but it decreases significantly more in USG guided aspiration treatment in all the follow up ($p < 0.05$).

Volume of liver abscess	Conservative Treatment Group (Mean±SD)	USG Guided Aspiration Treatment Group (Mean ± SD)	P value
Initial Volume of Liver Abscess (cc)	115.83±46.01	122.51±45.37	0.573
First week after treatment Volume of Liver Abscess (cc)	103.77±42.98	80.47±35.26	0.025
Second week after treatment Volume of Liver Abscess (cc)	48.60±37.67	64.77±27.55	0.023
Third week after treatment Volume of Liver Abscess (cc)	68.70±32.56	52.77±21.29	0.029
Fourth week after treatment Volume of Liver Abscess (cc)	55.40±28.44	39.77±15.26	0.010
Second month after treatment Volume of Liver Abscess (cc)	44.50±24.09	27.07±10.35	<0.001
Third month after treatment Volume of Liver Abscess	31.63±18.39	16.47±7.61	<0.001

Table 2: Volume of Liver Abscess before treatment and after treatment improvement in both groups

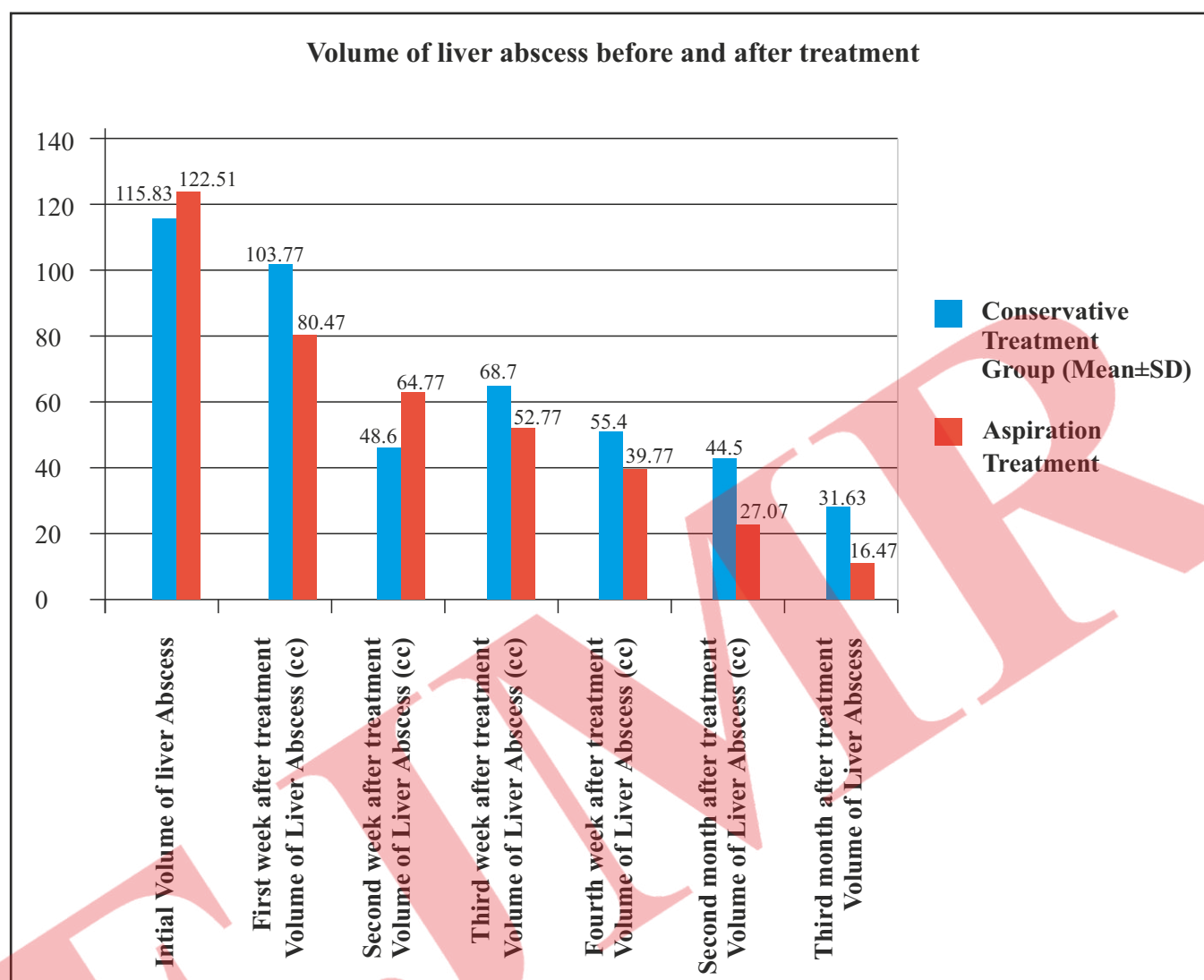


Fig. 5: Volume of liver abscess before and after treatment

In Below Table no.3 shows the hospital stay of the patients suffering from liver abscess and it was found that the stay was significantly lower in USG guided aspiration treatment than conservative treatment ($p < 0.05$).

Hospital days and time of half reduction	Conservative Treatment Group (Mean±SD)	USG Guided Aspiration Treatment Group (Mean ± SD)	P value
Hospital stays (Days)	14.87±2.010	10.17±1.91	<0.001
Time of half reduction in size (Days)	27.47±16.82	14.60±7.56	<0.001

Table 3: Duration of Hospital stay and Time of half reduction in size

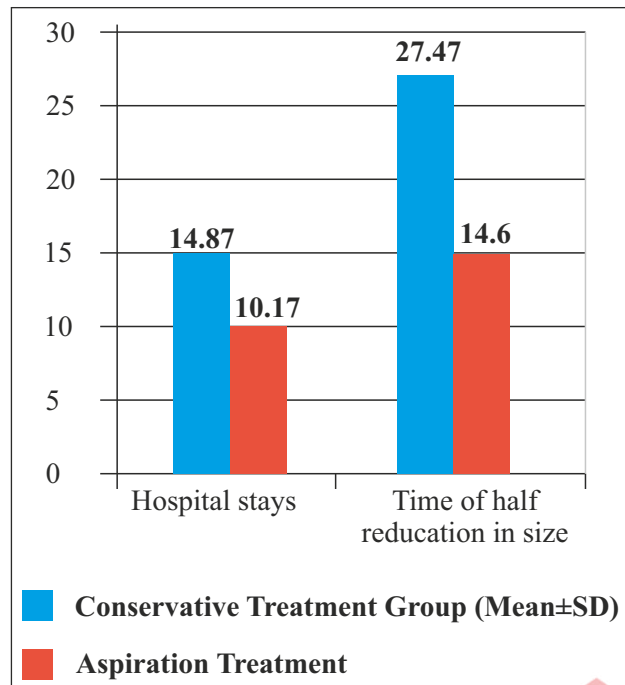


Fig. 6 : Hospital stay and time of half reduction

In Below Table no. 4 shows the outcome of the studied patients; majority of studied patients 6 (20.0%) shows the reoccurrence in conservative management group while only one (3.3%) patients in USG Guided Aspiration Treatment group and surgical intervention was found in 4 (13.3%) in conservative management group & no any patients was found to be in USG Guided Aspiration Treatment group and association was found to be statically significant ($P < 0.05$). In the present study no any mortality in any group.

Outcomes	Conservative Treatment Group (Mean±SD)	USG Guided Aspiration Treatment Group (Mean ± SD)	P value
Reccurrence	6 (20.0%)	1(3.3%)	0.044
Surgical intervention	4 (13.3%)	0(0.0%)	0.038
Mortality	0(0.0%)	0(0.0%)	

Table 4: Outcome of Conservative and USG Guided Aspiration Treatment Modalities

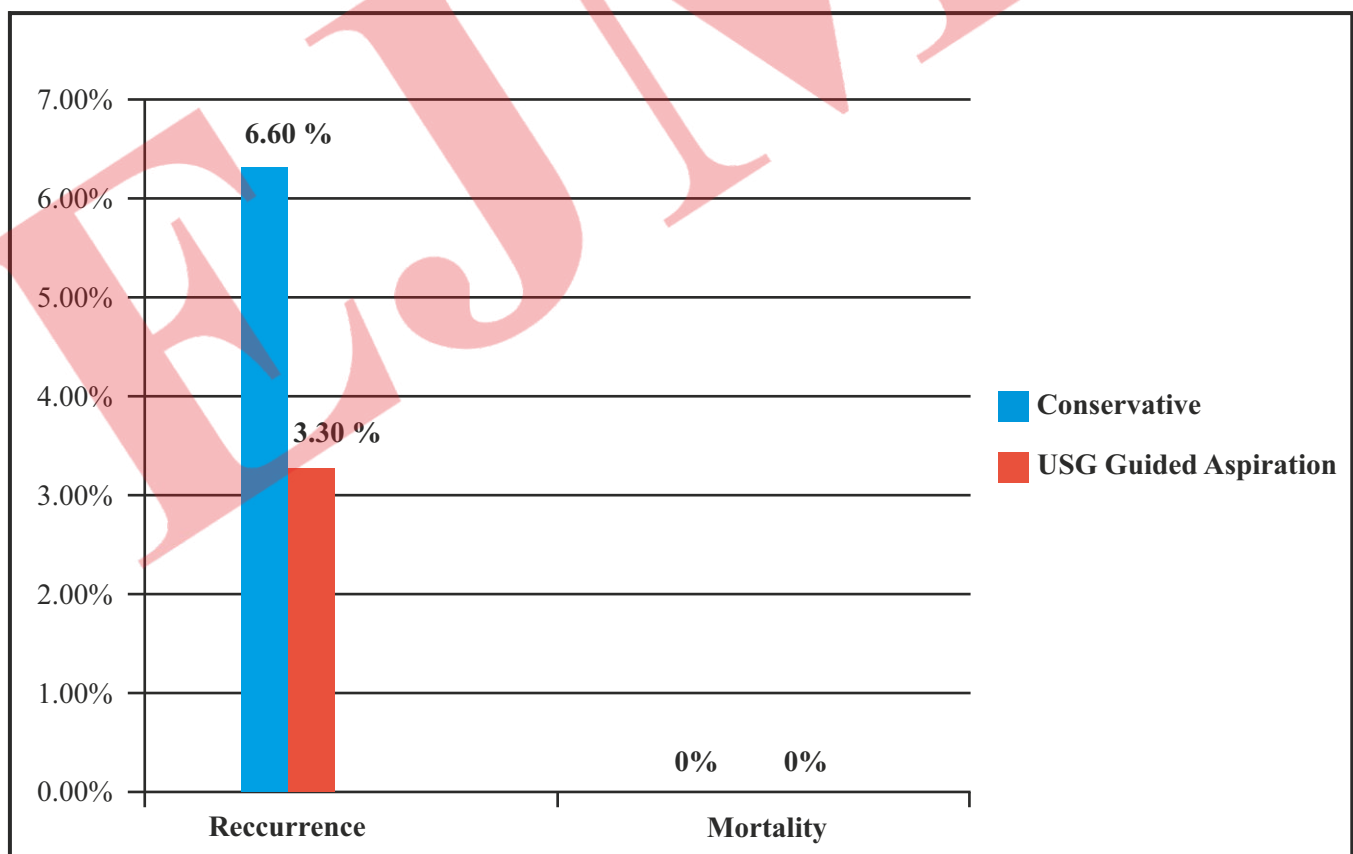


Fig. 7: Outcome of Conservative and USG Guided Aspiration Treatment Modalities

DISCUSSION

Amoebic Liver abscesses is an important cause of morbidity and mortality in tropical countries and developing countries. In our settings, amoebic liver abscess (ALA) is relatively more common and potentially life-threatening complications of infection with the protozoan parasite *Entamoeba histolytica*. Patient improving early due to recent advances in interventional radiology, intensive care, progress in antibiotic therapy, and use of ultrasonography and CT scanning of the upper abdomen which led to early diagnosis and treatment of patients having liver abscess. All selected cases of small amoebic liver abscess ($\leq 200\text{ml}$) observe significant ($\geq 50\%$) reduction in size of liver abscess in patients managed conservatively or USG guided needle aspiration. Mondal A et al⁹ did an observational study of the effective treatment options in amoebic liver abscess in a tertiary care setting in West Bengal, India. Farman Ali et al¹⁰ also discussed the numerous therapeutic procedures towards the management of hepatic abscess in adults. Total of 60 patients were taken in our study to compare the outcome of patients undergoing conservative management versus ultrasound guided aspiration of small amoebic liver abscess ($\leq 200\text{ml}$). The significant ($\geq 50\%$) reduction in size of liver abscess in patients managed conservatively were analyzed using Pearson's Chi-square test or Fisher exact tests and Student's t-test will be applied to compare frequencies and means respectively. In our study, out of a total 60 the majority of patients 21 (35.0%) were in the age range 18-30 years, followed by 20 (33.3%) were in the age category of 31-40 years, and 11 (18.3%) age category of 41-50, while the rest of the patients 8 (13.3%) were in the age range of >50 years. The mean age of studied patients was 37.10 ± 12.66 within range 18-80 years. Similar results were reported by Mondal A et al⁹ 30-40 age group was the most common age of presentation with total 60% of the participants belonging to this group. This finding supported by Farman Ali et al¹⁰ the most common group in ALA is 31-40 years while in PLA was more frequent in younger age group i.e. 21-30 years. Male patients 52 (86.7%) were dominate over female patients 8 (13.3%). But Mondal A et al⁹ reported that there was only four female out of 100 patients. Bansal P et al¹¹ observed the majority of patients (92.5%) were males. In present study, all patients were shows abdominal pain and majority of patients 51 (85.0%) were shows the fever followed by Nausea/Vomiting were 29 (48.3%), Chills were 27 (45.0%), Anoxeria were 24 (40.0%) while Weight Loss and others were only 4 (6.7%) in both category. Majority of studied patients 20 (33.3%) were shows the pallor followed by icterus were 15 (25.0%), tenderness were 10 (16.7%), jaundice were 7

(11.7%) while hepatomegaly were only 3 (5.0%). Similarly Mondal A et al⁹ observed the patients presented with pain abdomen, fever, swelling of abdomen. In all the patients, pain was the chief complaint. Patients presented with fever and abdominal swelling 60% and 80% respectively. On clinical examination tender hepatomegaly and jaundice were elicited. While a tender hepatomegaly was present in 80% of the patients, icterus was observed in 36% of the patients. Christopher S et al¹² also observed the several cases gave history of right upper quadrant dull aching pain associated with fever in 84.28% patients and chills in 41.42% patients. Vomiting was noted in 25.71% patients, loose stools in 4.28% patients and anorexia in 18.57% patients. In our study Majority of patients shows the right lobe involvement (93.4%) and single abscess (90.0%) in both groups. Farman Ali et al¹⁰ reported the 88% patients had single liver abscess and 87.55% of their patients had their right lobe involved. In our study, Reduction in Volume of liver Abscess after conservative treatment group shows the significant reduction in Volume of Liver Abscess. Kale Set al¹³ concluded from a conservative approach is effective in the management of ALA for a majority of patients. Failure of conservative management was predicted by the bigger size of the abscess (maximum diameter $>7.7\text{ cm}$). Durge Set al¹⁴ concluded the conservative medical management of amoebic liver abscess is safe and effective. Liver abscess have differential diagnosis with upper abdominal and right respiratory tract disease. In present study, reduction in Volume of liver Abscess after USG Guided Aspiration Treatment Group also shows the significant reduction in Volume of Liver Abscess. Similarly Khan FY et al¹⁵ reported amoebic liver abscess patients underwent ultrasound guided aspiration and showed good response to metronidazole treatment. Their mean duration of hospitalization and duration of therapy was 7.7 ± 4.1 days and 11.8 ± 2.1 days respectively, and all patients were cured. In our study, Conservative Treatment Group shows the duration of hospital stay and time of half reduction in size were significantly higher than the USG Guided Aspiration Treatment Group. Majority of studied patients 6 (20.0%) were shows the reoccurrence in conservative management group while only one (3.3%) patients was in USG Guided Aspiration Treatment group and surgical intervention was found in 4 (13.3%) in conservative management group & no any patients was found to be in USG Guided Aspiration Treatment group and association was found to be statically significant ($P < 0.05$). Zafar A and Ahmed S¹⁶ observed needle aspiration with anti-amoebic drugs is more effective in the management of amoebic liver abscess than only drug treatment.

CONCLUSION

Liver abscesses occurred frequently between 30-60 years. Males were affected more than females. Most of the cases had an acute presentation, and right lobe is most commonly affected. Pain in abdomen was the most common symptom present in all 60 cases. Patients treated with ultrasound guided Aspiration drainage improved rapidly than those treated with conservative treatment. Abscess cavity resolves better in case of ultrasound guided Aspiration drainage than conservative treatment. Conservative Treatment Group shows the duration of hospital stay and time of half reduction in size were significantly higher than the USG Guided Aspiration Treatment Group. Reoccurrence rate is less in case of USG Guided Aspiration Treatment group. There was no any mortality in present study. USG Guided needle aspiration drainage is more effective than conservative management but there is minimal chances of bleeding and secondary infection with frequent aspiration in treatment of liver abscess. Conservative treatment was observed to be sufficient in majority of patients of amoebic liver abscess of lesser size while with USG Guided needle aspiration drainage useful also in large abscess having complications was a viable option to drain the high viscous content of amoebic liver abscess adequately. Ruptured or complicated abscesses need to be drained surgically. Further studies are required to compare the outcome of patients undergoing conservative management versus ultrasound guided aspiration of small amoebic liver abscess.

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