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A Comparative Study On Therapeutic Efficacy Of Conservative Medical Management And Percutaneous Drainage Of Solitary Moderate Sized Amoebic Liver Abscess

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Abstract:
Background*: Amoebic Liver Abscess is the commonest complication of amoebiasis and the incidence is 3-9 % of total cases of Amoebiasis. The standard treatmentof moderate sized liverabscess is use of appropriate antibiotics andsupportive care. Routine aspiration in the Liver abscess remainsdebatable. Ultrasound guided needle aspirationis fairly safe. It is an invasiveprocedure. However, the review of the literature reveals that treatment of small amoebicliverabscess(single /multiple) is mainly conservative. Despite, large amoebic abscess or major complicated abscess is treated with closed or opendrainage method. It needs further studies in medium amoebicliver abscesses to compare conservative alone versus needle aspiration with supportivemanagement*
Materials and Methods*: This is a prospective comparative carried out in 50 Patients of patients diagnosed/ referred to government Rajaji hospitals, madurai with solitary amoebic liver abscess of size 5-10 cm on ultrasound abdomen for period of 1 year. The patients are randomized into two groups with 25 in each. patients in Group A are treated with medical management (metronidazole 750mg three times for 10 days along with diloxanide furoate 20mg/kg in three divided doses for 10 days) while it is needle aspiration along with supportive management in group B. Response to type of treatment will be assessed for each group and compared in terms of time needed for Improvement in fever, pain and tenderness ,reduction in size of abscess in USG after 72 hrs ,secondary intervention needed/complications occuredand duration of hospital stay*
Results*: Percutaneous aspiration along withsupportive management is superior than drug therapy alone in the management of solitary amoebic liver abscess of size 5-10cms in terms of faster recovery, faster improvement in clinical symptoms, greater reduction in the percentage of abscess size, shorter duration of hospital stay anddecreased complication associated with it*
Conclusion: *Needle aspiration along with supportive management shows superior results in management of moderate sized amoebic liver abscess in terms of recovery, improvement in clinical symptoms, reduction in the percentage of abscess size, duration of hospital stay and complication associated with it*
Key Word*:. Needle aspiration, Medical management, Drug therapy, Amoebic liver abscess*

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I. Introduction

Amoebiasis affects 10% of world population. It involves about 10% of the world population; with 10% of infected cases develop clinical syndromeof amoebic manifestations.Among these ,approximately 60% aresolitary and mainly located in right lobe of theliver. Amoebic liver abscess occurs most commonly inthe age group of 20-45 years. It is seven to nine times common in male .It needs further studies in medium amoebicliver abscesses to compare conservative alone versus needle aspiration with supportivemanagement .Hippocrates is credited with first description of a hepatic abscess in year 4000BC. In early 20thcentury, inciting event was usually appendicitis, causing pylephlebitis and the resultant hepatic abscess[1]. Open surgical drainage was recommended treatment for many years. In1953, McFadzeanand associates in Hong Kong advocated closed aspiration and antibioticsfor treatment of solitary liver abscess. However, this treatment did not gainacceptance until imaging advancements in 1980s allowed for preciselocalization and percutaneous approach to treatment. This study was conducted tocompare the outcome of patients undergoing conservative management versus ultrasound guidedaspiration of moderate sized solitary amoebic liver abscess

II. Material And Methods

This is a double blinded prospective study done on 50 patients who were diagnosed with evidence of solitary amoebic liver abscess of size 5-10cms on ultrasound abdomen in government rajaji hospital, madurai from november 2020 to november 2021

Study Design: Prospective comparative study

Study Location: This was a tertiary care teaching hospital based study done in Department of General surgery, government rajaji hospital, madurai

Study Duration: November 2020 to November 2021.

Sample size:50 patients.

Subjects & selection method: Patients above 13 years of age who are diagnosed to have moderatesized (5-10cm) solitary amoebic liver abscess in GRH Madurai will be included in this study . This is a prospective study carried over a period of 1 year. Patient will be randomly grouped into two-group A and B.

GROUP A –patients in this group will be treated with metronidazole 750mg three times for 10 days along with diloxanide furoate 20mg/kg in three divided doses for 10 days

GROUP B –patients will be treated with percutaneous aspiration in addition to supportive management

Inclusion criteria:

1. All cases of amoebic liver abscess diagnosed in/referred to government Rajaji hospitalsusing ultrasound suggestive of solitary amoebic liver abscess or serology positive for amoebic liver abscess
2. Patients more than 13 years of age and above of either sex

Exclusion criteria:

1. Patients less than 13 years of age
2. Malignancy of hepatobiliary system.
3. Abscess in close proximity to large vascular structures
4. all cases of pyogenic liver abscess
5. Impending rupture/Ruptured abscess
6. Multiple liver abscess
7. Liver abscess of size less than 5cm or greater than 10cm
8. Complicated liver abscess/decompensated liver disease patients
9. Caudate lobe/left lobe liver abscess
10. Bleeding diathesis

Procedure methodology

Patients above 13 years of age who are diagnosed to have moderatesized (5-10cm) solitary amoebic liver abscess in Government Rajaji hospitals, Madurai will be included in this study . This is a prospective study carried over a period of 1 year. The diagnosis of amoebic liver abscess is made based on

- History-age, sex, alcoholic history , trauma, diabetic mellitus ,previous history s/o liver cirrhosis
- Symptoms of abdominal pain ,fever , chills ,jaundice
- Signs such as hepatomegaly, intercostal tenderness
- Laboratory finding and serological investigations
- Pus aspirate culture and sensitivity
- Radiological findings –ultrasound findings(single , less echogenic)

Based on the above parameters , amoebic liver abscess will be diagnosed excluding pyogenic liver abscess Based on serology and usg findings , patient with solitary moderate sized liver abscess can be identified and included in study . patient will be randomly grouped into two-group A and B. Patients in group A will be treated with metronidazole 750mg three times for 10 days along with diloxanide furoate 20mg/kg in three divided doses for 10 days. Patients in group B will be treated with percutaneous aspiration in addition to supportive management. While doing percutaneous aspiration , abscess site will be marked using ultrasound and patient will be shifted to ot and will be done under aseptic condition. Patient will be followed up based on improvement in pain ,fever ,tenderness . USG will be done after 72 hrs to look for reduction in abscess size. Patient who are not responding to medical treatment after 72 hrs , will be subjected to percutaneous drainage in group A. Patient who are not responding to management proposed in group b will be subjected to pigtail catheterization or open surgical management after attempting three repeated aspiration depending on clinical/hematological and radiological parameters. Reduction in abscess size <10% on usg done at 3rd day will be considered non response to management/progression of disease and hence they will be subjected to secondary procedures. Patient who are not responding to any form of treatment will be considered as treatment failure. Supportive management in group B includes hydration and antibiotics(same one used in group A)

Statistical analysis

Analysis of data was done by personal computer using SPSS (Statistical program for social science) as follows:

- Description of quantitative variables as mean, standard deviation(SD) and range
- Description of qualitative variables as number and percentage
- Statistical difference between quantitative variables were assessed using unpaired student t test
- Chi-square test was used to compare qualitative variables
- Correlation between two continuous variables were evaluated using spearman correlation co-efficient
- Statistical significance was set as P value of 0.05 or less

III. Result

Table no 1 Shows Out of 25 patients in group A, mean value for time needed for improvement in symptoms is 4.84, while it is 1.68.From this, we can observe that most Patient treated with needle aspiration along with supportive management have showed improvement in their symptoms earlier than medical management alone significantly. P-value is significant between them

Table no 1: Distributon of time needed for improvement in symptoms(in days)

TIME NEEDED FOR IMPROVEMENT IN SYMPTOMS (IN DAYS)	MEDICAL MANAGEMENT	NEEDLE ASPIRATION
DAY 1	0	13
2	0	9
3	1	2
4	4	0
5	18	1
D 6	2	0
Total	25	25
Mean	4.84	1.68
SD	0.624	0.945
P-value	<0.001 Significant	

NOTE- In the following charts and tables,Medical management alone group(group A) will be described as medical management while needle aspiration along with supportive management will be described as needle aspiration

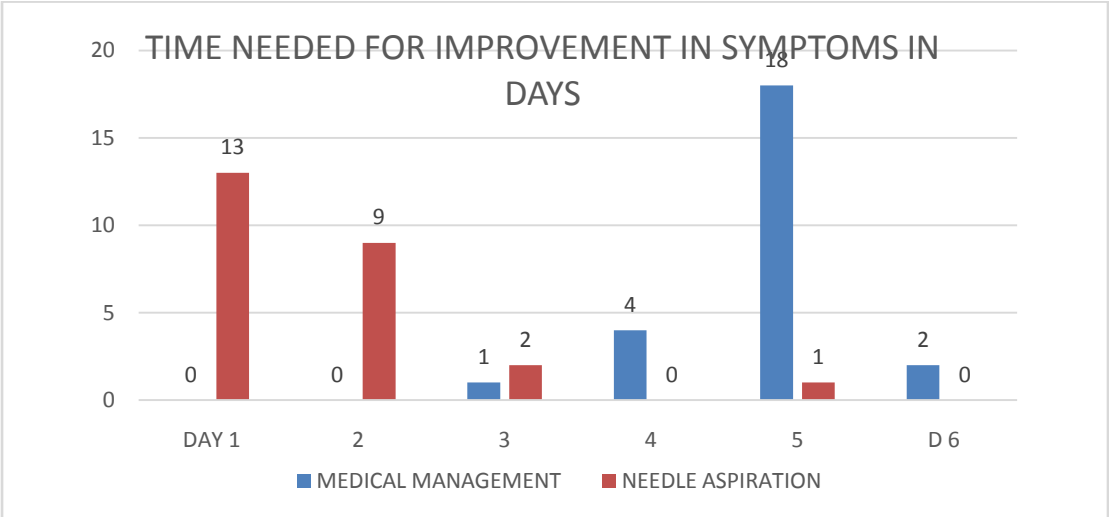

Table no 2 Out of 25 patients in group A,1 was responded with reduction of abscess cavity volume> 30 at 3rd day and mean value is 22.6,while in group B,24 were responded with reduction of abscess cavity volume>30 at 3rd day and mean value is 55.6. From this, we can observe that most Patient treated with needle aspiration along with supportive managementhave showed greater reduction in percentage of abscess volume than medical management alone significantly at 3rd day. P-value is significant between them

Table no2: Distribution of percentage of abscess reduced at 3rd day in both groups

PERCENTAGE OF ABSCESS VOLUME REDUCED AT 3rd DAY (%)	MEDICAL MANAGEMENT	NEEDLE ASPIRATION
≤ 30	24	1
> 30	1	24
Total	25	25
Mean	22.6	55.6
SD	8.794	10.928
P'value	<0.001 Significant	

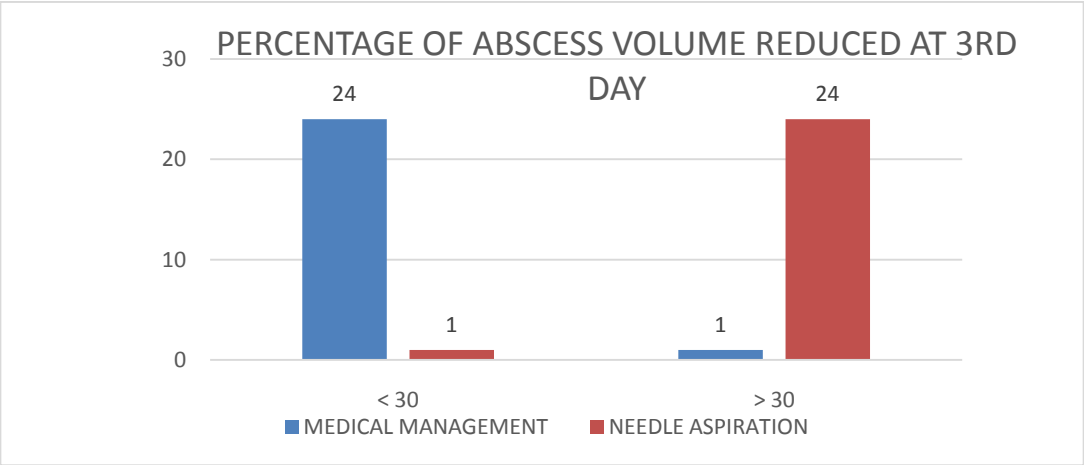

Table no3: Shows Out of 25 patients in group A,4 were responded with reduction of abscess cavity volume> 55 at 7th day and mean value is 49.6,while in group B,24 were responded with reduction of abscess cavity volume>55 at 7th day and mean value is 72.8.From this ,we can observe that most Patient treated with needle aspiration along with supportive management have showed greater reduction in percentage of abscess volume than medical management alone significantly at 7th day. P-value is significant between them

Table no3: Distribution of percentage of abscess reduced at 7 th day in both groups

PERCENTAGE OF ABSCESS VOLUME REDUCED AT 7th DAY (%)	MEDICAL MANAGEMENT	NEEDLE ASPIRATION
≤ 55	21	1
> 55	4	24
Total	25	25
Mean	49.6	72.8
SD	6.602	10.809
P'value	<0.001 Significant	

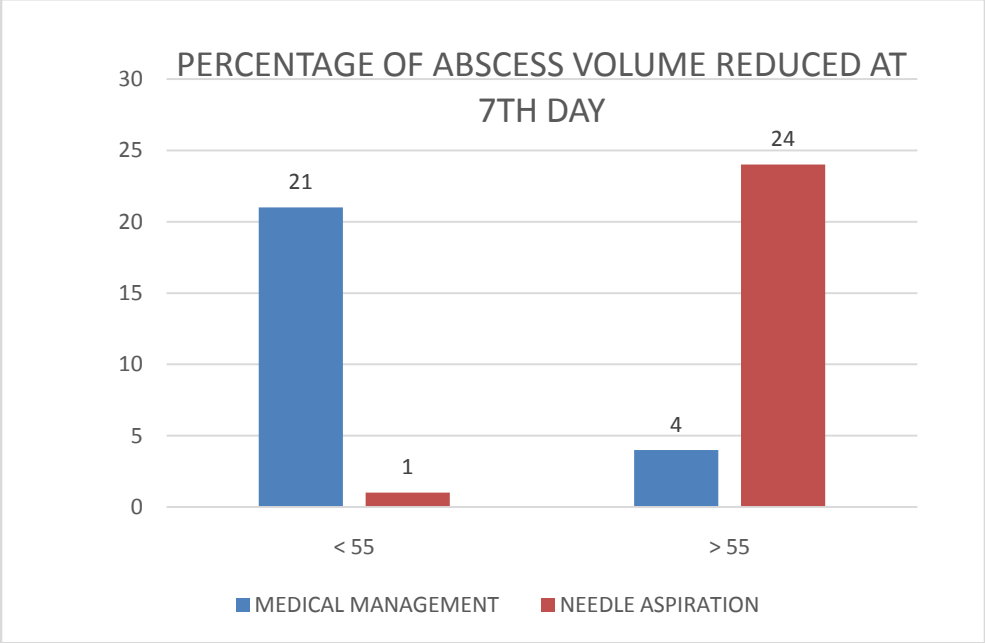

Table no4 Shows Out of 25 patients in group A,11 were responded with reduction of abscess cavity volume> 75 at 14th day and mean value is 76.2, while in group B,24 were responded with reduction of abscess cavity volume>75 at 14th day and mean value is 86. From this, we can observe that most Patient treated with needle aspiration along with supportive management have showed greater reduction in percentage of abscess volume than medical management alone significantly at 14th day. P-value is significant between them

Table no 3 : Distribution of percentage of abscess reduced at 14th day in both groups

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PERCENTAGE OF ABSCESS VOLUME REDUCED AT 14th DAY (%)	MEDICAL MANAGEMENT	NEEDLE ASPIRATION
≤ 75	14	1
> 75	11	24
Total	25	25
Mean	76.2	86
SD	8.073	7.071
P'value	<0.001 Significant	

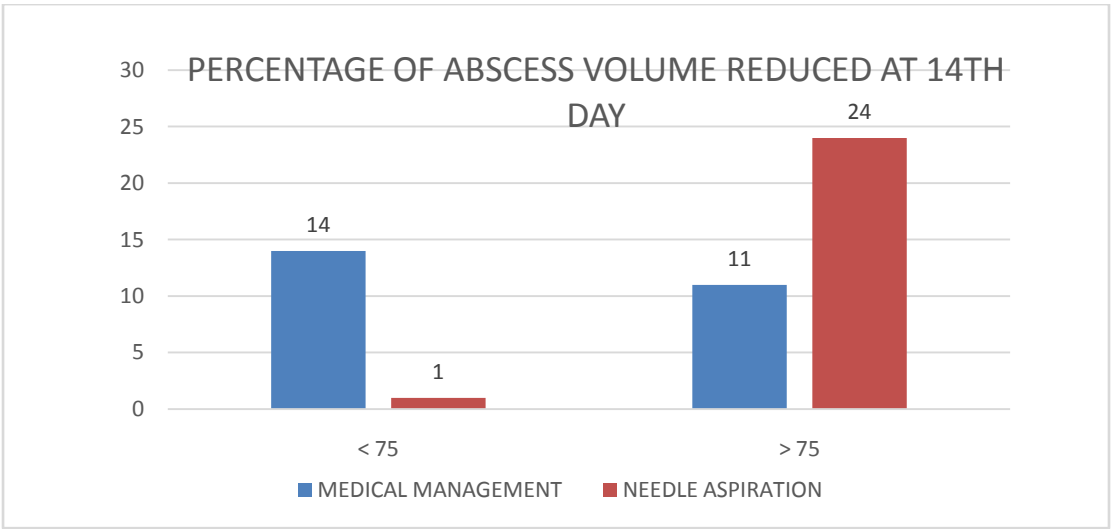


Table no 5 Shows Out of 25 patients in group A,12 were stayed ≤ 7 days in hospital and mean value is 7.8, while in group B,24 were stayed ≤ 7 days in hospital and mean value is 3.92**.** From this,we can observe that most Patient treated with needle aspiration along with supportive management have shorter hospital stay than medical management alone significantly. P-value is significant between them

Table no 5 : Distribution of hospital stay (in days)in both groups

HOSPITAL STAY (IN DAYS)	MEDICAL MANAGEMENT	NEEDLE ASPIRATION
≤ 7	12	24
> 7	13	1
Total	25	25
Mean	7.8	3.92
SD	1	1.579
P'value	<0.001 Significant	

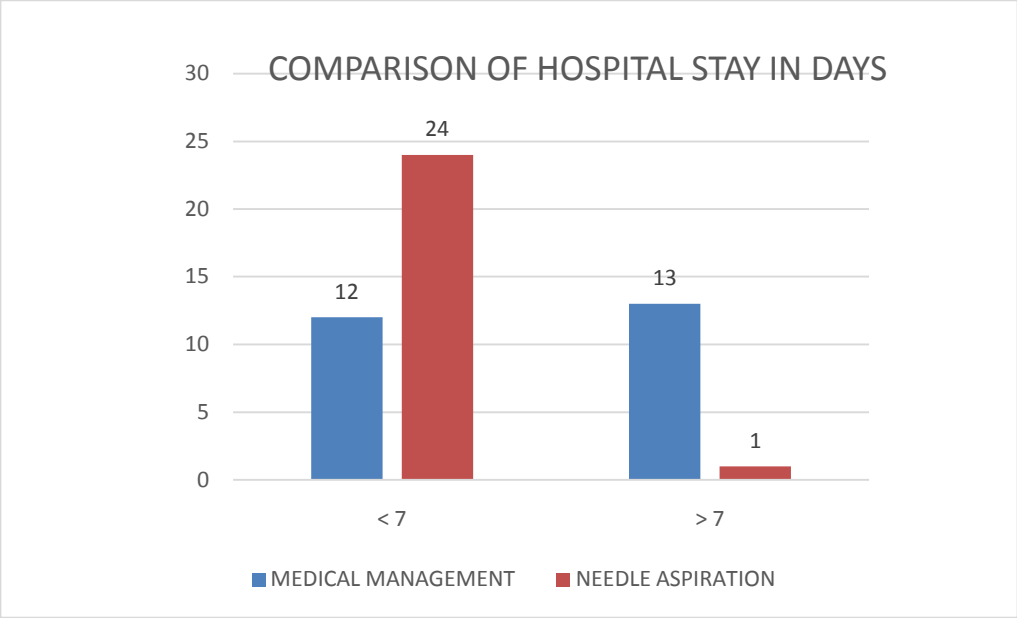


Table no 6 showsOut of 25 patients in group A,5 had secondary procedure done, while in group B,1 had secondary procedure done. From this, we can observe that there was no significant difference in secondary procedure done between patients in both groups.p-value is not significant between them

Table no 6 : Distribution of secondary procedure done in both groups

SECONDARY PROCEDURE	MEDICAL MANAGEMENT	NEEDLE ASPIRATION
Yes	5	1
No	20	24
Total	25	25
P'value	0.189 Not significant	

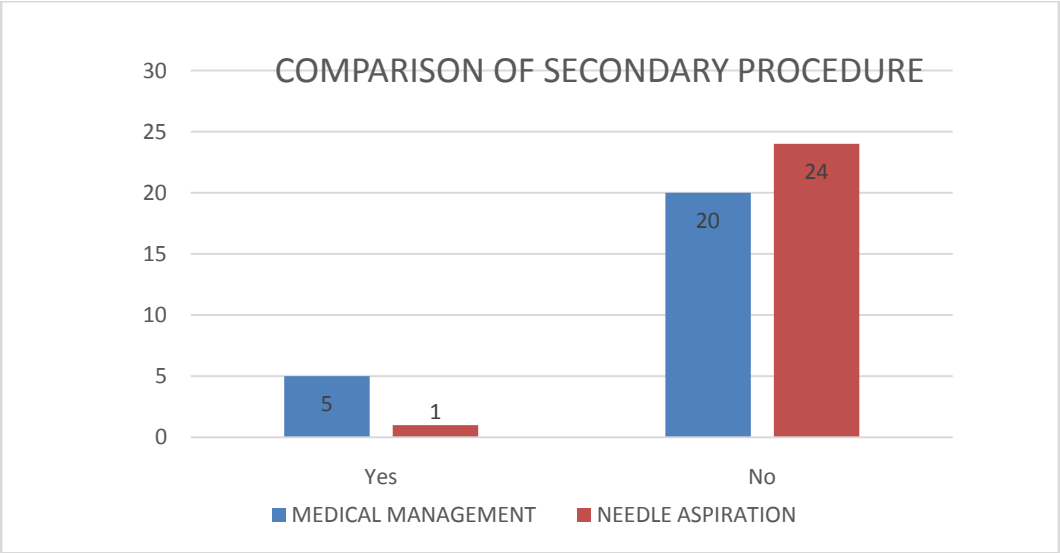
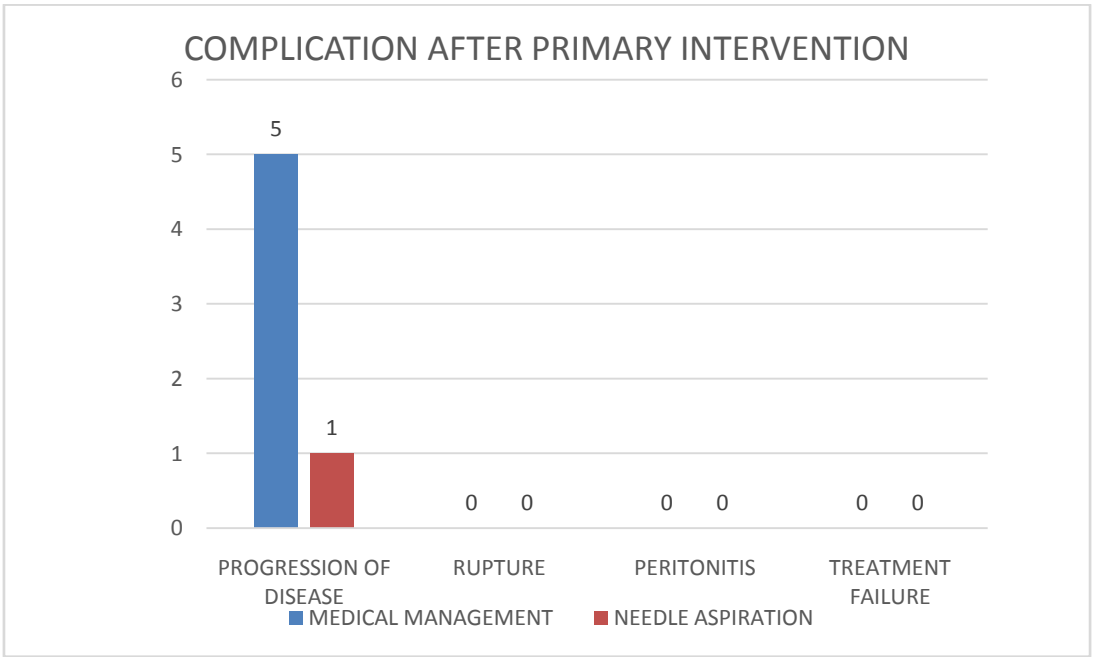


Table shows Out of 25 patients in group A,5 had progression of disease in form of reduction of abscess<10% on 3rd day**.** Out of 25 patients in group B,1 had progression of disease in form of reduction of abscess<10% on 3rd day**.** P-value between them is not significant between them in complication occured after primary intervention

Table no 6 : Distribution of complication after primary intervention in both groups

COMPLICATION AFTER PRIMARY INTERVENTION	MEDICAL MANAGEMENT	NEEDLE ASPIRATION
PROGRESSION OF DISEASE	5	1
RUPTURE	0	0
PERITONITIS	0	0
TREATMENT FAILURE	0	0
Total	5	1
P'value	0.189 Not significant	



IV. Discussion

Surgical management of amoebic liver abscess has been an accepted therapy for many years. The treatment of amoebic liver abscess has changed following revolution in the Imaging field. Needle aspiration shall be proceeded under Ultrasound or CT usage. Some peopleadvocate aspiration was needed for abscesses >10 cm, left sided abscess, Abscess which is about to rupture, failure of medical treatmentand the patient is sick to withstand surgery . Many physicians believe medical management alone is as effective as aspiration combined with medical management for small sized abscesses and routine aspiration for diagnostic or therapeutic reasonsare not needed. needle aspiration along with supportive management is the best available one for large amoebic liver abscess and studies shown it is superior to chemotherapy alone. Therefore nowadays needle aspiration is the initial treatment of choice of large amoebic liver abscess(>10cm). There are varying reports about the size of abscess ideal for needle aspiration. Some consider all abscesses >10 cm should be aspirated, while others consider abscesses >6 cmand still others consider abscess >5cm should be aspirated. However, we aspirated abscesses of size 5-10 cms(moderate sized amoebic liver abscess) . Results of this study show a significant difference in the clinical response between the two groups. There was a rapid clinical improvement in Group B whichreceived needle aspiration and antiamoebic drugs compared to Group A which received drug treatment alone. These findings are also observed in some other studies. We found Needle Aspiration an easy and effective method of treatment of Amoebic Liver Abscesses 5 -10 cms. It was successful in 96% patient to evacuate the abscess. It failed in only 1 patient because the pus was thick. Failure of needle aspiration of amoebic liver abscess is usually due to either thick pus or multiloculated abscess. This study showed that needle aspiration combined with antiamoebic drugs shortened hospital stay. This is also reported in other studies. This study also showed that needle aspiration under ultrasound guidance is safe. This study also shows accelerated resolution of abscess on ultrasound. These findings were also observed in another study. On the basis of our experience, needle aspiration is a rapid, safe and effective method of treating amoebic liver abscess. Routine aspiration of amoebic liver abscess is not indicated. It should be the initial treatment of choice for abscesses 5-10cms, abscesses which do not respond to chemotherapy. Routine surgical drainage is also not indicated. Surgery should be restricted to those cases where needle aspiration fails to cure the disease, abscess ruptures or there are multiple abscesses and presence of thick pus leading to residual disease.

V. Conclusion

Needle aspiration along with supportive management shows superior results in management of moderate sized amoebic liver abscess in terms of recovery, improvement in clinical symptoms, reduction in the percentage of abscess size, duration of hospital stay and complication associated with it

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