



A Prospective Study of Changing Trend in the Clinical and Ultrasonographic Case Profile of Amoebic Liver Abscess – HIV Correlation and the Surgical Implications - In a Tertiary Care Hospital in North Andhra Pradesh

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Abstract

Introduction: *In India due to poor sanitary condition and a lower socioeconomic status amoebiasis is endemic and amoebic liver abscess accounts for 3-9% of all cases of amoebiasis. Amoebic liver abscess (ALA) is the commonest extra intestinal manifestation of amoebiasis.*

Aim: *The aim of this work is to study the various presentations of amoebic liver abscess and HIV correlation to find any change in the clinical and radiological profile of ALA in recent years and to compare with other studies.*

Materials and Methods: *This study is conducted prospectively over a period of 2 years from December 2015 to November 2017 in the department of General Medicine, Andhra Medical College and King George Hospital, Visakhapatnam, Andhra Pradesh.*

Study Design: *Observational study.*

Sample Size: *Eighty patients were the confirmed diagnosis of ALA are included in this study.*

Study Subjects: *All patients who fulfill the diagnostic criteria for amoebic liver abscess are included in the study.*

Results: *In the present study, the incidence of amoebic liver abscess in the year 2016 is estimated to be 0.58/1000/year of 61,732 patients admitted in King George Hospital, Visakhapatnam whereas the incidence of HIV positive with amoebic liver abscess in the year 2016 is only 0.08/1000/year. Among HIV patients ALA is more intense in presentation and treatment if challenging.*

Discussion: *The present study has shown that the patterns of ALA largely parallels what has been established previously in terms of age, sex, onset, risk factors, clinical manifestations, number, size and location of abscess, treatment modalities and prognosis with few modifications.*

Conclusions: *It is concluded that amoebic liver abscess is a treatable condition having a good prognosis if it is recognized early and treated appropriately particularly among HIV patients.*

Keywords: *ALA, HIV, Clinical, Radiological, study.*

Materials and Methods

This study is conducted prospectively over a period of 2 years from December 2015 to November 2017 in the department of General Medicine, Andhra Medical College and King George Hospital, Visakhapatnam, Andhra Pradesh.

Method of collection of data: Informed written consent is obtained from all the patients included in the study.

A proforma is designed and used for data collection. A detailed clinical history of the patient is taken regarding the present and past illnesses. All the patients are subjected to through clinical evaluation and laboratory investigations like urine examination, examination of stool for ova and cysts, examination of blood for hemoglobin, total leucocyte count (TLC), differential count, erythrocyte sedimentation rate (ESR) and liver function tests like serum bilirubin, serum alkaline phosphatase, SGPT, SGOT and serum albumin and hepatitis profile. X-ray chest, abdominal ultrasonography and aspiration of the abscess if >6 cm size are also done.

All the patients with amoebic liver abscess included in the present study are screened for HIV infection in I.C.T.C. Centre in the Department of Microbiology ELISA. CD4 count is done if HIV infection is diagnosed.

Statistical Analysis: All recorded data are collected and analyzed using descriptive statistics. All the statistical analyses in this study are made using the Statistical Package for social Sciences (SPSS) software. Statistical significance level is accepted at P-value equaled to 0.05. Continuous variables are reported as mean + standard deviation (SD).

Data obtained from 80 cases of amoebic liver abscess admitted to Medical Wards of King George Hospital, Visakhapatnam. Andhra Pradesh during the period from December 2015 to November 2017 are taken. Among the 80 cases of ALA, 8 (10%) patients had positive HIV test result and remaining 72 (90%) patients are HIV –

negative. This data forms the basis for the present study.

Ethical Clearance: Institutional ethical Committee has approved the conduct of the study.

Incidence = Total Number of cases / Population at risk X1000= 36/61,732 X1000= 0.58/1000 per year

Exclusion Criteria

- Patients below the age of 14 years are excluded from this study.
- In addition, patients whose specimen, such as blood or aspirate concomitantly isolated fungus or bacteria are excluded from this study to avoid the enrolment of patients with mixed infection.

HIV Seropositive Cases:

Table 3: HIV Status of ALA cases

S.No	HIV Status	Number of Cases (n=80)
1	HIV-. Negative ALA cases	(72) 90%
2	HIV-. Positive ALA cases	(8) 10%

Onset of Amoebic Liver Abscess:

Table 6: Onset of Amoebic Liver Abscess

S.No	Onset	Total No. of cases		HIV –ve (n = 72)		HIV + ve (n = 8)	
		No. (n=80)	%	No.	%	No.	%
1	Acute onset	65	81.25	62	86.1	3	37.5
2	Subacute onset	10	12.5	6	8.3	4	50
3	Chronic onset	5	6.25	4	5.6	1	12.5

Risk Factors:

Table 7: Risk Factors of ALA

S.No	Risk factor	No. of cases (n=80)	%
1	Alcoholism	75	93.75
2	History of Dysentery	10	12.5
3	Diabetes Mellitus	8	10
4	HIV	8	10
5	HBV Hepatitis	2	2.5
6	HCV Hepatitis	0	0
7	IV Drug abuse	0	0

Clinical Symptoms:

Table 8: Clinical Symptoms of ALA

S. No	Symptom	Total cases (n=80)	HIV- ve (n = 72)	HIV+ve (n = 08)	Chi square	P value
1	Fever	85% (68)	87.5%(63)	62.5% (5)	1.84	0.17
2	Abdominal pain	86.5%(70)	88.9%(64)	75% (6)	0.32	0.57
3	Pain right lower chest	46.25%(37)	47.2%(34)	37.5% (3)	0.02	0.88
4	Ref. pain to right shoulder	15%(12)	15.3%(11)	12.5% (1)	0.1	0.75
5	Jaundice	16.25%(13)	15.3%(11)	25% (2)	0.04	0.84
6	Nausea, Vomiting	37.5%(30)	37.5%(27)	37.5% (3)	0.15	0.69
7	Cough & Expectorations	10%(08)	9.7%(7)	12.5% (1)	0.14	0.70
8	Breathlessness	12.5%(10)	12.5%(9)	12.5% (1)	0.32	0.57
9	Diarrhoea/Dysentery	12.5% (10)	9.7% (7)	37.5% (3)	2.86	0.09

Clinical Signs:

Table 9: Clinical Signs of ALA

S.No	Clinical Sign	No. of cases (n=80)	HIV-negative (n = 72)	HIV-Infected (n = 08)	Chi square	P value
1	Hepatomegaly	80% (64)	80.6 % (58)	75% (6)	0.01	0.92
2	Abdominal mass	40% (32)	40.3%(29)	37.5% (3)	0.05	0.82
3	Abdominal tenderness	86.5%(70)	88.9% (64)	75% (6)	0.32	0.57
4	Intercostal tenderness	75% (60)	76.4% (55)	62.5% (5)	0.19	0.66
5	Icterus	16.25% (13)	15.3% (11)	25% (2)	0.04	0.84
6	Respiratory signs	18.5% (15)	18% (13)	25% (2)	0	1

Ultrasonographic Features:

Table 11: Ultrasonographic Features in ALA

S. No	Feature	No. of cases (n=80)	HIV-negative (n = 72)	HIV-Infected (n = 08)	Chi square	P value
Location of ALA						
1	Right Lobe abscess	72.5%(58)	75%(54)	50%(4)	1.18	0.27
2	Left Lobe abscess	12.5%(10)	12.5%(9)	12.5%(1)	0.32	0.57
3	Both lobes	15%(12)	12.5%(9)	37.5%(3)	1.84	0.17
Number of ALA						
1	Single abscess	77.5%(62)	79.2%(57)	62.5%(5)	0.39	0.53
2	Multiple abscesses	22.5%(18)	20.8%(15)	37.5%(3)	0.39	0.53

Laboratory parameters:

Table 12: Laboratory parameters in ALA

S. No	Lab parameter	No. of cases (n=80)	HIV-negative (n = 72)	HIV-Infected (n = 08)	Chi square	P value
1	Leucocytosis	90% (72)	94.4% (68)	50% (4)	11.25	0.0008*
2	Hb<10 g%	52.5% (42)	52.8% (38)	50% (4)	0.05	0.82
3	Elevated S.bilirubin	17.5% (14)	16.7% (12)	25% (2)	0.01	0.92
4	Elevated SGPT	26.25% (21)	26.4% (19)	25% (2)	0.11	0.74
5	Elevated SGOT	25% (20)	25% (18)	25% (2)	0.19	0.66
6	Elevated ALP	28.75% (23)	29.2% (21)	25% (2)	0.03	0.86
7	Decreased Serum albumin	12.5% (10)	12.5% (9)	12.5% (1)	0.32	0.57

Treatment:

Table 14: Treatment Modality in ALA

S. No	Treatment option	No. of cases (n=80)	HIV-negative (n = 72)	HIV-Infected (n = 08)	Chi square	P value
1	Drug therapy only	30% (24)	29.2% (21)	37.5% (3)	0.01	0.92
2	Drug + Aspiration	70% (56)	70.8% (51)	62.5% (5)	0.01	0.92
3	Surgical	0	0	0	-	-

Prognosis:

Table 15: Prognosis of ALA

S. No	Parameter	No. of cases (n=80)	HIV-negative (n = 72)	HIV-Infected (n = 08)	Chi square	P value
1	Hospital stay <2 weeks	60% (48)	62.5% (45)	37.5% (3)	0.98	0.32
	≥2 weeks	40% (32)	37.5% (27)	62.5% (5)		
2	Mortality	0	0	0	-	-

Table showing comparison of Common Clinical Manifestations of ALA

Study	Fever	Abd. Pain	Hepatomegaly	Jaundice
Seeto RK et al. (1999)	80%	84%	25%	4%
Wiwanitkit.V. et al. (2002)	74%	85%	60%	40%
Amarapurkaret et al. (2003)	85%	72%	82%	18%
Kuan-Sheng Wu et al. (2008)	100%	75%	-	32%
Chen et al. (2009)	90%	81%	-	11%
Mukhopadhyay et al. (2010)	80%	100%	82%	15%
Sharma et al. (2010)	94%	91%	16%	13%
Soumik Ghosh et al. (2014)	94%	99%	89%	26%
Hoque MI et al. (2014)	93%	93%	67%	-
Raja Kalayarasan et al. (2017)	80%	87%	-	43%
Present Study	85%	86.5%	80%	16.25%

Table showing comparison of Ultrasonographic Features in ALA

Study	Location of abscess			Abscess	
	Right Lobe	Left Lobe	Both lobes	Single	Multiple
Seeto RK et al. (1999)	79%	9%	12%	77%	23%
Wiwanitkit. V. et al. (2002)	74%	11%	15%	77%	23%
Amarapurkar et al. (2003)	90%	10%	-	-	-
Kuan-Sheng Wu et al. (2008)	79%	-	-	83%	17%
Chen et al. (2009)	74%	26%	0	74%	26%
Mukhopadhyay et al. (2010)	85%	14%	1%	94%	6%
Sharma et al. (2010)	65%	13%	22%	78%	22%
Jha AK et al. (2012)	80%	18%	2%	-	-
Soumik Ghosh et al. (2014)	71%	-	-	65%	35%
Mallik M et al. (2014)	92%	-	-	81%	19%
Hoque MI et al. (2014)	77%	-	-	80%	20%
Present Study	72.5%	12.5%	15%	77.5%	22.5%

Results and Discussion

In the present study an effort is made to review the demographic data, to find out any variation in clinical profile, radiological profile, treatment outcome and to compare clinical presentations among the HIV positive and HIV negative patients.

Demographic Characteristics of ALS: In the present study, 80 cases of amoebic liver abscess admitted to Medical wards of King George Hospital, Visakhapatnam, Andhra Pradesh during the period from December 2015 to November 2017 are studied. Among the 80 ALA cases, 8 are found to be HIV positive. In the present study, the incidence of amoebic liver abscess is 0.58/1000/year of 61,732 patients and the incidence of HIV positive amoebic liver abscess is 0.08/1000/year of 61,732 patients admitted to medical wards of King George Hospital, Visakhapatnam from January 2016 to December 2016. Seeto et al.⁶ in his series noted the incidence of ALA was 8.5 patients/ 100,000 hospital admissions. A significant rise in the prevalence of HIV positive amoebic liver abscess was noted in the studies done by Meng-Shuian Hsu et al. on Taiwanese subjects. 80% of amoebic liver abscess occurring in the age group of 21 to 50 years. The mean age of patients with amoebic liver abscess in the present study is 41 + 102 years, which is in accordance with other Indian studies like by Sharma et al., Soumik Ghosh et al. and Mukhopadhyay et al. who reported it to be 40.5, 41 and 43.64 years respectively. The reasons for this male preponderance remains obscure, but high incidence of intestinal amoebiasis and alcohol abuse may be the factors behind the high incidence in males, while the hormonal milieu in female may provide protection against the disease. Reddy and Thangavelu proposed that the female menstrual cycle prevents hepatic congestion and thus makes the organ less susceptible to abscess formation. Ocshner and De Bakey attribute higher incidence in males to alcoholism, which predisposes to hepatitis and trauma. In the present study 75% of patients are alcoholics belonging to

low socioeconomic group consuming non-refined alcohol like toddy and arrack. In the present study also most (95%) of the patients belong to lower socioeconomic class and is comparable to many of other studies from India like Sharma et al., Soumik Ghosh et al. and Mukhopadhyay et al. Majority (81.25%) of patients in the present study are presented within 2 weeks of the start of symptoms. An acute presentation has become more common in recent years, probably because patients seek medical attention earlier and also non-invasive imaging studies facilitates disease detection early⁹.

Alcoholism Commonly believed to play some role in the aetiology of ALA and many patients give a past history of consuming it. Chronic alcoholism is the major risk factor identified for amoebic liver abscess in the present study and is found in 75 patients (93.75%) and majority of patients consumed country liver in the form of toddy or arrack (cheep liquor). Mukhopadhyay et al. found that alcoholics had larger abscesses, greater frequency of complications and delayed resolution of patients had history of alcohol intake, and postulated that alcohol suppresses function of Kupffer cells in liver which has important role in clearing amoeba.⁶ Moreover, invasive amoebiasis appears to be dependent on the availability of free iron. A high content of iron in the diet, often obtained from the country liquor in habitual drinkers predisposes to invasive amoebiasis, as does a diet rich in carbohydrate. In the present study, 12.5% patients gave a past history of diarrhea/dysentery. Previous studies report it variably from 4% to 33%. Soumik Ghosh et al. (2014) from Northern India had reported higher incidence of diarrhea in ALA in 23% of patients. The most common presenting symptoms in the study include abdominal pain (86.5%) and fever (85%). Previous reports have shown that abdominal pain and fever are two typical clinical symptoms that develop in over 85% patients with ALA⁵. In the present study 85% of patients presented with fever as compared to 57% in Vakil et al. series, 68.5% in Aptkar et al. series, 86% in

Nanda et al. series and 100% in Kasliwal et al and Singh et al. series. Abdominal pain is observed in 86.5% of cases of ALA in the present study as compared to 75% in Alkat et al. series, 86% in Aptkar et al. series and 100% in Kasliwal et al and Singh et al. series^{5,6}. The common clinical signs of amoebic liver abscess in the present study are hepatomegaly (80%), abdominal tenderness (86.5%) and intercostals tenderness (75%). From India, Sharma.M.P.et al¹⁵ in a study of 70 cases of ALA found hepatomegaly in 84%.

Jaundice: Jaundice is seen in 16.25% of patients in the present study. In earlier studies from India, it was reported in 45-50% of patients.

Atypical Manifestations: In the present study 22.5% patients are presented with atypical manifestations, the most common among them are absence of hepatomegaly (20%) followed by ascities with pedal edema (5%), marked jaundice, acute abdomen and circulatory failure in 2.5% patients each. Mukhopadhyay. M. et al. and Joshi VR et al. observed that both jaundice and ascites tend to occur most commonly in the presence of multifocal abscesses.

Ultrasonographic Features

Abdominal ultrasound is still the diagnostic modality of choice for hepatic pathologies including liver abscess. In the present study, the right lobe is most frequently involved in 72.5% patients followed by isolated left lobe is most frequently involved in 72.5% patients followed by isolated left lobe abscess in 12.5% and combined involvement of both lobes of liver in 12 patients 15% of patients. Similar high incidence of liver abscess in right lobe was reported by other contemporary studies like Sharma N et al. (65%), Soumik Ghosh et al.⁴⁴ (71%), Hoque MI et al. (77%), Jha AK et al. (80%), Mukhopadhyay M et al. (85%) and Malik.P et al. (92%).

The majority of amoebic liver abscesses (77.5%) are solitary lesions in the present study and is comparable to other recent Indian studies like Sharma N et al. (78%). Howue MI et al. (80%), Malik.P et al. (81%) and Mukhopadhyay M et al. (94%). Multiple ALA are observed in 22.5% of

patients in the present study and is comparable to other studies by Sharma. N et al. (22%), Hoque MI et al.⁶² (20%) and Malik.P et al. (19%). But Mukhopadhyay M et al. noticed multiple amoebic liver abscesses in 5.6% of patients only in their study.

Laboratory Parameters

The most common abnormal laboratory parameter among the 80 cases of amoebic liver abscess in the present study is leucocytosis (90%) which is similar to many other studies like Mukhopadhyay M et al. Raised liver enzymes more than 3 times the normal occurred in 35% and 36% cases in the study by Sharma N. et al.

Elevated serum bilirubin is observed in 17.5% in the present study which is similar to that observed by Mukhopadhyay M et al. (15%) and Amarapurkar DN et al. (18%).

Treatment

Similar to the present study, Mukhopadhyay M et al.⁴⁵ also observed that needle aspiration combined with chemotherapy represents a successful therapeutic approach in the treatment of ALA. But Amarapurkar DN et al. in his study of ALA, noted majority of patients (80%) improved with drug therapy alone and only 15% required percutaneous aspiration.

Summary and Conclusion

In the present study, 80 cases of amoebic liver abscess admitted to Medical wards of King George Hospital, Visakhapatnam. Andhra Pradesh during the period from December 2015 to November 2017 are studied. Among the 80 cases, 8 (10%) are found to be HIV positive. The incidence of amoebic liver abscess in the present study in the year 2016 is estimated to be 0.58/1000/year of hospital admissions whereas the incidence of HIV positive amoebic liver abscess is only 0.08/1000/year. In the present study, highest number of amoebic liver abscess cases is recorded during the months of April to June which is attributable to the habit of toddy (fermented palm juice) drinking during the summer season.

Amoebic liver abscess cases are predominantly noted in males with maximum incidence in 3rd, 4th and 5th decades of life. Majority of patients with ALA belong to lower socioeconomic group with regards to education, occupation, and per capita income. Acute onset is the most common presentation in ALA with HIV negative patients. Whereas subacute onset is common in ALA with HIV positive patients. Alcohol consumption in the form of toddy or arrack (cheap liquor) is found to be a major risk factor for amoebic liver abscess in the present study. The most common clinical features of ALA observed in the present study are fever, abdominal pain, hepatomegaly and intercostal tenderness. No obvious difference in clinical features between HIV-infected and HIV-negative patients could be identified in the present study except for slightly more frequent occurrence of icterus and respiratory symptoms of amoebic liver abscess. In the present study 22.5% patients are presented with atypical manifestations, the most common among them are absence of hepatomegaly, ascites with pedal edema, marked jaundice, acute abdomen and circulatory failure. Marked jaundice is more frequently observed in HIV positive patients than HIV negative patients of amoebic liver abscess. Most of the amoebic liver abscesses are found in the right lobe of liver and most often single. Multiple amoebic liver abscesses are observed in 22.5% of patients in the present study. The most common abnormal laboratory parameter among the ALA cases in the present study is leucocytosis (90%). Leucocytosis is significantly more common in HIV-negative patients with ALA (94.4%) than in HIV-infected patients (50%). Majority of patients of ALA (70%) needed both drug therapy and percutaneous needle aspiration for recovery. There is no statistically significant difference in treatment modalities between HIV-infected patients and HIV-negative patients with amoebic liver abscess. The duration of hospital stay is relatively prolonged for more than 2 weeks in HIV-infected patients with amoebic liver abscess (62.5%) when compared to that of HIV-negative patients with amoebic liver abscess (37.5%).

It is concluded that amoebic liver abscess is a treatable condition having a good prognosis if it is recognized early and treated appropriately. The present study has shown that the patterns of ALA largely parallels what has been established previously in terms of age, sex, onset, risk factors, clinical manifestations, number, size and location of abscess, treatment modalities and prognosis with few modifications. In the present study, there is no significant difference in clinical manifestations, ultrasonographic features, laboratory data, treatment modalities and prognosis between HIV-positive patients and HIV-negative patients with amoebic liver abscess except for a few.

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