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A STUDY ON ETIOLOGY, CLINICAL MANIFESTATIONS AND OUTCOME OF MANAGEMENT OF LIVER ABSCESS

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ABSTRACT

In recent years imaging guided percutaneous drainage using catheters has been increasingly used to treat liver abscesses with reported success rates ranging from 70-100%.

The aim of the present study is to find out the demographic distribution, different modes of presentations, risk factors association, alteration of various laboratory & radiological investigations in diagnosis of liver abscess & responses to standard institutional management strategies.

In this prospective observational study, 60 clinically suspected and/or ultrasonographically diagnosed cases of liver abscess presenting to OPD, ER and wards of General surgery, Medical college and hospital, Kolkata, during January 2017 to June 2018 were enrolled.

Majority (60%) of patients presented acutely within 7 days of onset of illness. Subacute presentation and chronic presentation was noted in 30% ,10% cases respectively. Liver functions were deranged in almost all the cases. Hypoalbuminemia was observed in 85% cases. Mean serum ALP level was elevated more than twice and elevation was seen in 85% cases. Mean SGOT and SGPT levels were also elevated almost 4 times the normal upper limit. Hyperbilirubinemia was observed in 20% of cases and prothrombin time was elevated in almost half the cases. Complications of liver abscess like intra abdominal rupture and peritonitis, septicaemia, pleural rupture and cholangitis were observed.

Ultrasound is simple, inexpensive and quick to perform, with a diagnostic accuracy of 90%. It helps in determining the number, size and site of abscess and can be used as guide for percutaneous aspiration. Percutaneous aspiration is a very effective modality of treatment in uncomplicated cases. Surgery (Laparotomy) should be reserved for complications like rupture of abscess & peritonitis. Improvement in life style, provision of clean uncontaminated water and abstinence from alcohol could be a major boost in direction of elimination of this notorious disease.

KEYWORDS

Liver Abscess, Clinical Manifestations, Outcome

INTRODUCTION

The first description of a hepatic abscess is credited to Hippocrates in the year 4000 BC. No progress was made until the seminal paper by Ochsner and colleagues in 1938.They reported a 62% survival rate for patients undergoing surgical drainage and with the advent of antibiotic therapy, the combination of surgical drainage and antibiotics became standard treatment for the next 4 decades. Next landmark paper was in 1953, when McFadzean and co-workers first reported on percutaneous drainage, which was successful in 14 patients without a death . 1

Worldwide about 40-50 million people were affected by liver abscess with majority in developing countries. India has 2nd highest incidence of liver abscess in the world, amoebic liver abscess affects up to 10% population in developing countries. In recent decades, the predominant aetiology of pyogenic liver abscess has changed from pylephlebitis to a biliary origin, and more recent reports from Asia and the United States have noted an increase in incidence of cryptogenic liver abscesses.Fortunately, advanced imaging techniques and improved therapeutic modalities have decreased the case-fatality rate to 6% to 26%. Hepatic abscess are polymicrobial and account for 40% cases. 2

Most common organism cultured from the pus are Klebsiella and E.coli. Hepatic abscess are classified as those of bacterial origin and those caused by Entamoeba histolytica. Most hepatic abscess involve right lobe of liver in three fourth of cases, left lobe involved in 20 % cases. 3

Caudate lobe is uncommonly involved. Ultrasound whole abdomen and CECT whole abdomen are mainstay diagnostic modalities for hepatic abscess. Most patients are cured by percutaneous drainage (pigtail drainage) along with systemic antibiotics. But the success rate is between 69- 90%.Patient who fails to respond to the aforementioned therapy have been traditionally managed by open surgical drainage in combination with antibiotics. Surgical drainage is a definite indication in the cases of burst or leaking liver abscess with peritonitis. 4

We studied the etiology, clinical features and outcome of management options of liver abscess. To study the outcome of management of liver abscess such as resolved abscess, duration of hospital stay, organized abscess, dislodged pigtail catheter, enlarging abscess leading to perforation, signs of peritonitis leading to death and variables influencing it like demographic profile (Age, sex ,religion and socioeconomic status), alcohol, diabetes and immunocompromised states. 5

MATERIALS AND METHODS

60cases of liver abscess diagnosed clinically and/or ultra sono graphically providing valid consent for examination and management from January 2017 to June 2018 at Medical College & Hospital, Kolkata.

Patient data collected regarding:

Age, gender, complaints, past-surgical history, past history of liver abscess , history of alcoholism ,diabetes, any immunodeficiency states, any history of biliary tract disorder ,history of amoebic dysentery, jaundice was taken.

Patient was examined in detail. If the patient is referred from elsewhere the details of the same was considered at the time of admission.

Blood investigations and X rays & and other radiological modalities performed was added.

Complications if developed were assessed in detail management of the same and the further complications were followed up.

RESULT AND ANALYSIS

We found that majority, 90%, of cases was males and only 10% were females. It was found that age of the patients included in this study varied from 15 to 69 years. The median age was 42 years and mean was 42.6 ± 13.9 years. The highest incidence was noted in age groups 31-40 years (25%) and 51-60 years (25%). Our study showed that the socio economic status of maximum number, 24(40%), of enrolled cases was

lower class. Second commonest socioeconomic status group to which 21(35%) patients belonged was of upper lower class. Rest of the patients was of lower middle class. None of the enrolled cases belonged to upper middle and upper class.

We found that hepatomegaly was found in 30(50%) cases on abdominal palpation. In general examination, presence of jaundice and pallor was found in 15(25%) cases each. Three (5%) cases were found to be in shock. It was found that leucocytosis (>11,000 cells/cumm) was found in 42(68%) cases and anemia (Hb<10 mg/dl) was found in 14(23%) cases. Mean Hb level was 12.26 ± 2.28 g/dl. Hyperglycemia with RBS >200mg/dl was observed in 15(25%) cases. Mean RBS was 226.52 ± 98.61 mg/dl. Serum urea and creatinine levels were elevated in 12(20%) and 9 (15%) cases respectively. Mean urea and creatinine levels were 37.30 ± 14.57 and 1.19 ± 0.75 respectively. We found that liver functions were deranged in almost all the cases.

Hypoalbuminemia (<3.5 mg/dl) was observed in 51(85%) cases with a mean albumin level of 2.55 ± 1.1 mg/dl. Serum ALP, SGOT and SGPT levels were elevated in 51 (85%), 51(85%) and 45(75%) cases respectively. Mean serum ALP, SGOT and SGPT levels were 346.47 ± 220.50, 203.22 ± 211.54 and 246.70 ±247.51 mg/dl respectively. Our study showed that hyperbilirubinemia (>2.4 mg/dl) was observed in 12 (20%) cases with a mean bilirubin level of 3.32 ± 2.18 mg/dl. Prothrombin time was elevated above 14 seconds in 30(50%) cases and a mean PT level of 18.04 ± 9.47 was observed.It was found that the most common organisms obtainedfrom pus C/S from liver abscess were Klebsiellapneumoniae. and Escherichia coliin 10(17%) cases each. Enterococcus spp and Staphylococcus aureus were found in 3(5%) and 2(3%) cases respectively. Pus culture in 35(58%) cases showed no growth.

Present study showed that amoebic serology for detection of Entamoebahistolytica specific IgG antibodies showed presence of antibodies in 42(70%) cases and 18(30%) were IgG negative. It was found that pyogenic and amoebic infections were found in 11(18%) and 42(70%) cases respectively. A total of 7(12%) cases were found to have both pyogenic and amoebic infections of liver.

Our study showed that all patients in this study were tested for the presence of viral markers of HBV, HCV and HIV. HBsAg and anti HCV antibodies were found in 4 (6.6%) and 2(3.3%) cases respectively. Anti HIV antibodies were detected in 2(3.3%) cases of liver abscess. We found that chest X ray was normal in 21(35%) cases and abnormal chest X ray findings were observed in 39 (65%) cases. Elevation of right dome of diaphragm was noted in 30 (50%) cases and Pleural effusion in 15(25%) cases. Other abnormal CXR findings like right basal pneumonitis and air fluid level were detected in 12 (20%) and 2(3%) cases respectively. Our study showed that USG abdomen was done in all the cases. Right lobe of liver was involved in maximum number, 45(75%), of cases. 6(10%) cases had involvement of left lobe and 9(15%) cases had involvement of both lobes of liver. Solitary liver abscess was noted in 45 (75%) cases while 15 (25%) cases had multiple liver abscess. Size of abscess was large (>200ml) in majority, 42 (70%), of cases and small abscesses were reported in 18 (30%) cases.

We found that complications due to liver abscess were observed in total 21 (35%) cases. Intraabdominal rupture and peritonitis was noted in 11(18%) cases and septicaemia was observed in 6 (10%) cases. Other complications like Cholangitis and pleural rupture was seen in 3 (5%) and 1(2%) cases respectively. It was found that a total of 18 (30%) patients with small liver abscesses (< 5 cms) were treated conservatively with antibiotics alone. USG guided pigtail drainage along with administration of antibiotics was done in 36 (60%) cases with large (>5cms) abscesses. Open surgical drainage was performed in 6 (10%) cases with intra abdominally ruptured liver abscesses. Our study showed that outcome was recorded in all the cases. Majority, 54 (90%), of cases recovered from illness and got discharged after being treated. Mortality was observed in 3 (5%) cases due to complications of liver abscess and 3 (5%) cases were lost to follow up due to leave against medical advice (LAMA). We found that mean duration of hospital stay of all the enrolled cases was 7.9 ± 3.3 days with a range of 3 to 15 days. Patients were divided into 3 categories based on duration of hospitalisation: 1-5 days, 6-10 days and 11-15days. Majority 30(50%) of cases stayed for 6-10 days duration in hospital. Cases who stayed for 1-5 days and 11-15 days were 17(28%) and 13(22%) respectively. It was found that all the patients were followed up for a period of 6 months. Once in 2 weeks for the 1st2 months and monthly thereafter for the next 4 months for any recurrent attacks. Recurrence was observed in 6(10%) cases. Two cases 3(5%) were lost to follow up and 3 (5%) cases died. No recurrence was observed in rest of the 48 (80%) cases.

DISCUSSION

In this prospective observational study, 60 clinically suspected and/or ultrasonographically diagnosed cases of liver abscess presenting to OPD, ER and wards of General surgery, Medical college and hospital, Kolkata, during January 2017 to June 2018 were enrolled. Detailed history was collected and various symptoms and signs were analysed. Routine blood investigations, liver function tests, microbiological investigations, chest X ray and USG abdomen were performed and reports were tabulated and analysed.

Treatment was given on the basis of size of abscess and complications. Patients were followed up and outcome was recorded. In this study 90% of cases were males and 10% were females showing a greater incidence of liver abscess in males as compared to females. Similarly, higher incidence in males than females was also reported by other Indian studies. We divided the patients into 6 age groups: 11-20, 21-30, 31-40, 41-50, 51-60 and 61-70 years.

Age of the patients included in this study varied from 15 to 69 years. The median age was 42 years and the mean was 42.6 ± 13.9 years. The highest incidence was noted in age groups 31-40 years (25%) and 51-60 years (25%). Next most common age group affected was 41-50 year in 12(20%) cases. Hence, 70% of cases were seen in the 3rd to 6th decade of life. 9(15%) cases were also reported among young adults (21-30 years) age group. Few cases were reported in extreme age groups: children and adolescents (11-20 yrs) and elderly (61-70 years) with 6 (10%) and 3(5%) cases respectively. On the basis of revised Kuppuswamy scale, 2016, for scocioeconomic status, patients were divided into five categories: lower, upper lower, lower middle, upper middle and upper class.

Maximum number, 24(40%), of enrolled cases belonged to lower class. Second commonest socioeconomic class to which 21(35%) patients belonged was of upper lower class. Rest of the patients was of lower middle class. None of the enrolled cases belonged to upper middle and upper class. A detailed history was recorded from all the 60 enrolled cases. Alcoholism was found to be the most consistent risk factor in this study with 48(80%) cases giving history of chronic alcoholism for more than one year. Duration of > 10 years alcoholism was reported by 18(30%) cases. Study conducted by Mathur et al.1 on ALA also reported alcoholism as a risk factor in 70% of liver abscess patients showing a strong association of alcoholism and liver abscess. History of diabetes mellitus (DM) was present in 24(40%) cases which is comparable to the study conducted by Chan et al2. which reported DM in 59.8% cases of PLA. Past history of surgery and liver disease was present in 3(5%) and 6(10%) cases respectively. The onset of disease can be acute (<7 days), subacute (7 days to 2 months) or chronic (>2 months) depending upon the type, location and size of liver abscess. In our study, majority (60%) of patients presented acutely within 7 days of onset of illness. Subacute presentation was noted in 18(30%) cases and chronic presentation was observed in 6(10%) cases.

In an Indian study conducted by Kapadia et al.3 most of the cases presented between 7 days to 2 months of onset of illness. The most common presenting symptom was pain in abdomen which was present in all the 60(100%) enrolled cases. Pain was described as intermittent, dull aching pain localised to right hypochondrium and sometimes to epigastrium.

Next most common symptom was fever in 54(90%) cases. Fever was intermittent, moderate to high and in most cases associated with chills and rigors. Icterus was present in 15 (25%) cases and was mild and present alongwith the onset of fever. Diarrhoea was present in 6(10%) cases in this study of which 3 cases also reported passage of blood in stools.

Common respiratory symptoms associated with liver abscess are cough, difficulty in breathing and chest pain. In our study, cough and other respiratory symptoms were present in 12 (20%) cases. In a study conducted by Lyche et al.4 on pleuropulmonary manifestation of 30 amoebic liver abscess cases, 18(60%) cases presented with atleast 1 pulmonary complaint and 10(33%) cases presented with multiple

pulmonary symptoms. In this study, 3(5%) cases presented with altered sensorium as a manifestation of shock due to intraperitoneal rupture of abscess. Patients who presented with shock carried a grave prognosis and both the cases died.

Abdominal tenderness was elicited in all the 60(100%) cases mostly in right hypochondrium and in some cases, in the epigastric region due to left lobe abscess. Fever (>38.5°C) was the second commonest sign present in 57(95%) cases. Most patients had chills and rigors associated with intermittent spikes of fever. Abnormal respiratory findings like decreased breath sounds, basal crepitations and signs of consolidation were observed in 36(60%) cases. Hepatomegaly was defined as liver span of >11 cm by noting the upper and lower margins of liver on percussion. Hepatomegaly was found in 30(50%) cases on abdominal palpation. In these cases, liver was smooth, firm in consistency, tender and with sharp edge. In general examination, presence of jaundice and pallor was found in 15(25%) cases each. Three(5%) cases were found to be in shock. Both cases were due to ruptured liver abscess and both cases died. Hence, shock denotes a poor prognostic factor.

In this study, leucocytosis (>11,000 cells/cumm)was found in 42(68%) cases. Mean WBC count was 14,235 cells/cumm with a range of 4,800 to 28,000 cells/cumm. Anemia (Hb<10 mg/dl) was found in 14(23%) cases. Mean Hb level was 12.26 ± 2.28 g/dl with a range of 6.4 to 16g/dl.

Hyperglycemia with RBS >200mg/dl was observed in 15(25%) cases. Mean RBS was 226.52 ± 98.61 mg/dl. Serum urea and creatinine levels were elevated in 12(20%) and 9 (15%) cases respectively. Mean urea and creatinine levels were 37.30 ± 14.57 and 1.19 ± 0.75 respectively.
Liver functions were deranged in almost all the cases in our study. Hypoalbuminemia (<3.5 mg/dl) was observed in 51(85%) cases with a mean albumin level of 2.55 ± 1.1 mg/dl. As stated by Mathur et al.1, serum ALP may be elevated in both pyogenic and amoebic liver abscess. It is the most consistent and reliable biochemical indicator of ALA and remains elevated in 60-80% of cases. The rise is usually 2-4 times the normal level. In our study, serum ALP was elevated in 51 (85%) cases with a mean ALP level of 346.47 ± 220.50 mg/dl which was raised more than twice the upper normal limit. SGOT and SGPT levels were elevated in 51(85%) and 45(75%) cases respectively. Mean serum SGOT and SGPT levels were 203.22 ± 211.54 and 246.70 ± 247.51 mg/dl respectively which were almost 4 times the normal upper limit. Hyperbilirubinemia (>2.4 mg/dl) was observed in 12 (20%) cases with a mean bilirubin level of 3.32 ± 2.18 mg/dl. Prothrombin time was elevated above 14 seconds in 30(50%) cases denoting an altered synthetic function of liver and a mean PT level of 18.04 ± 9.47 was observed. Of 60 cases, 12 (20%) cases with small liver abscess <5 cms in size were managed conservatively by antibiotics and other medicines. 48 (80%) cases with large (>5cms) were subjected to surgical management and pus drained was sent for culture and sensitivity immediately. Due to lack of facility of anaerobic cultures in our hospital and financial constraint of patients, anaerobic culture was not performed in our study.

The most common organisms obtained were Enterococcus spp. and Escherichia coli in 11(18%) cases each. Klebsiellapneumoniaeand Staphylococcus aureus were found in 11(18%) and 6(10%) cases respectively. Anchovy sauce appearance of pus was seen in 17 (45%) cases and culture showed no growth in these cases. Similar to our study, E. coli was reported as the commonest organism by Jha et al.5 in cases of liver abscess. In one case in our study who had cholangitis with multiple liver abscess, K. pneumonia was isolated as a causative organism. Amoebic serology for detection of Entamoebahistolytica specific IgG antibodies showed presence of antibodies in 42(70%) cases of which 7 cases also had pyogenic infections.

In our study, 18% of cases had liver abscess due to pyogenic infections, 70% had liver abscess due to amoebic infections and 12% of cases had mixed infections of bacteria and amoeba. A previous Indian study by Jha et al.5 on 125 liver abscess patients, ALA was found in 88% cases and PLA in 12% cases.

All patients in this study were tested for the presence of viral markers of HBV, HCV and HIV. HBsAg and anti HCV antibodies were found in 4 (6.6%) and 2(3.3%) cases respectively.

Anti HIV antibodies were detected in 2(3.3%) case of liver abscess which was much lower than the incidence reported by Park et al.6 who found HIV in 32% cases of ALA. Chest X ray was done in all the cases and findings were analysed. Chest X ray was normal in 21(35%) cases and abnormal findings were observed in 39 (65%) cases. Most cases had elevation of right dome of diaphragm which was noted in 30 (50%) cases due to enlarged liver.

Right sided pleural effusion was observed in 15(25%) cases. Other abnormal CXR findings like right basal pneumonitis and air fluid level were detected in 12 (20%) and 2(3%) cases respectively.

Jha et al.5 found abnormal chest X ray in 50% cases of ALA and 40% cases of PLA. Lyche et al.4 found CXR abnormality in 53% of ALA cases with rt. sided pleural effusion(30%) and elevated hemidiaphragm(27%) being the commonest abnormalities.

USG abdomen was done in all the cases. Right lobe of liver was involved in maximum number, 45 (75%), of cases. Six (10%) cases had involvement of left lobe and 9(15%) cases had involvement of both lobes of liver. Solitary liver abscess was noted in 45(75%) cases while 15 (25%) cases had multiple liver abscess. Size of abscess was large (>200ml) in majority, 42 (70%), of cases and small abscesses were reported in 18(30%) cases. Complications due to liver abscess were observed in total 21 (35%) cases. Intraabdominal rupture and peritonitis was noted in 11(18%) cases and septicaemia with multiorgan dysfunction was observed in 6(10%) cases. Other complications like cholangitis and pleural rupture was seen in 3 (5%) and 1(2%) cases respectively. Mangukiya et al.7 reported ruptured liver abscess and pyothorax as a complication of liver abscess in 5% cases each. Chaudhary V et al.8 reported intraabdominal rupture and peritonitis in 2% of liver abscess cases. Peris et al.9 reported various complications of liver abscess like septic shock (14.3%), pleural effusion (14.3%), acute renal failure (8.2%), cardiac complications (8.2%), thrombosis(6.1%), biliary pancreatic complication(5.1%) and infectious complications(4.1%).

Controversies in the management of liver abscess still exist. Surgical drainage of liver abscess has been an accepted therapy for decades. The diagnosis and treatment of liver abscess has changed due to advances in imaging techniques.

Patients with small liver abscesses (< 5 cms) were treated conservatively with antibiotics, analgesics, antipyretics and antacids. A total of 18(30%) patients were treated conservatively. Patients with ALA were started on metro nidazole I. V. at a dose of 40 mg/kg (2.0-2.5 gm/day in divided doses x 8-10 days) and patients with PLA were treated with antibiotics as per the pus culture and sensitivity reports.

USG guided pigtail drainage along with administration of antibiotics was done in 36 (60%) cases with large (>5cms) liver abscesses. No complication was noted due to this procedure apart from local pain which soon subsided with analgesics. Patients showed dramatic improvement in their symptoms and signs within 48 hrs-72 hrs of drainage and were discharged. Open surgical drainage was performed in 6 (10%) cases with intra abdominally ruptured liver abscesses. All 9 cases presented with signs of acute abdomen and peritonitis and USG showed intra abdominally ruptured abscess. On laparotomy, thorough peritoneal lavage was done and drains were kept. Intercostal drainage was required in one case in whom the abscess had ruptured into pleural cavity.

In a study conducted by Peris et al. 9 most patients received antibiotics plus percutaneous drainage (61.2%) followed by antibiotic alone (31.6%) and antibiotic plus surgical drainage (7.1%). Outcome was recorded in all the cases. Majority, 54 (90%), of cases recovered from illness and got discharged after being treated. Mortality was observed in 3 (5%) cases due to complications of liver abscess and 3 (5%) cases were lost to follow up due to leave against medical advice (LAMA). Mean duration of hospital stay of all the enrolled cases was 7.9 ± 3.3 days with a range of 3 to 15 days. Patients were divided into 3 categories based on duration of hospitalisation. Majority (50%) of cases stayed for 6-10 days duration in hospital. Cases who stayed for 1-5 days and 10-15 days were 17 (28%) and 13(2 2%) respectively. All the patients were followed up for a period of 6 months: once in 2 weeks for the 1st 2 months and monthly thereafter for the next 4 months for any recurrent attacks. Repeat scans were done as required. Recurrence was observed in 6(10%) cases of whom 3 cases were given conservative management for small (<5cms) liver abscess. Only a

single case who received USG guided pigtail drainage for large liver abscess developed recurrence. Chaudhary et al.8 also reported recurrence in 8% of liver abscess cases. All the cases who developed recurrence received conservative management in their study.

CONCLUSION

Liver abscess is one of most common infection affecting liver. Amoebic abscess is much more common than pyogenic liver abscess on global scale. Though much progress has been made in direction of diagnosis and treatment of liver abscess, but it still remains a diagnostic and therapeutic problem. Delay in diagnosis remains a major determinant of severity of illness and outcome inliver abscess. Lack of proper sanitary condition, DM and addiction to alcohol are the most important predisposing condition for liver abscess. Ultrasound is simple, inexpensive and quick to perform, with a diagnostic accuracy of 90%. It helps in determining the number, size and site of abscess and can be used as guide for percutaneous aspiration. Percutaneous aspiration is a very effective modality of treatment in uncomplicated cases. Surgery (Laparotomy) should be reserved for complications like rupture of abscess & peritonitis. Improvement in life style, provision of clean uncontaminated water and abstinence from alcohol could be a major boost in direction of elimination of this notorious disease.

Table: Distribution of mean biochemical analysis

Investigation	Mean ± S.D.
TLC (cells/cumm)	14,235.60 ± 5738.00
Hemoglobin (g/dl)	12.26 ± 2.28
RBS (mg/dl)	226.52 ± 98.61
Urea (mg/dl)	37.30 ± 14.57
Creatinine (mg/dl)	1.19 ± 0.75
Sr. Albumin (mg/dl)	2.55 ± 1.10
Sr. Bilirubin (mg/dl)	3.32 ± 2.18
Sr. ALP (IU/L)	346.47 ± 220.50
SGOT (IU/L)	203.22 ± 211.54
SGPT (IU/L)	246.70 ± 247.51
Prothrombin time (sec)	18.04 ± 9.47

Table: Distribution of investigation, culture report and outcome

Investigation	Number(N)	Percentage (%)
Leucocytosis (>11,000 cells/cumm)	42	68
Anemia (<10g/dl)	14	23
Hyperglycemia (>200mg/dl)	15	25
Raised urea (>45mg/dl)	12	20
Raised creatinine (>1.2mg/dl)	9	15
Hypoalbuminemia (<3.5 mg/dl)	51	85
Hyperbilirubinemia (>2.4 mg/dl)	12	20
Elevated sr. ALP (>150 IU/L)	51	85
Elevated SGOT (>40 IU/L)	51	85
Elevated SGPT (>40 IU/L)	45	75
Elevated Prothrombin time (>14 sec)	30	50
Culture report		
Enterococcus spp.	3	5
Escherichia coli	10	17
Klebsiella pneumonia	10	17
Staphylococcus aureus	2	3
No growth	35	58
Total	60	100
Outcome		
Recovery	54	90
Death	3	5
Lost to follow up	3	5
Total	60	100

Table: Distribution of chest X ray findings and USG

Findings	Number(N)	Percentage (%)
Normal	21	35
Abnormal	39	65
• Elevated right dome of diaphragm	30	50
• Pleural effusion	15	25
• Right basal pneumonitis	12	20
• Air fluid level	2	3
USG finding		
Lobe involved	45	75
Right	6	10
Left Both	9	15
Number of abscesses Solitary	45	75
Multiple	15	25
Size of abscesses		
Small (<5 cms)	18	30
Large (>5 cms)	42	70

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