

Aetiology, Clinical Presentation and Outcome of Patients with Ascites in Medicine Unit of Chittagong Medical College Hospital : A Study of 100 Cases

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ABSTRACT

Background: Ascites is a common clinical condition encountered by physician in day-to-day practice. It will be an understatement to state that ascites is common in our country rather it is safe to say that ascites is one of the most common mode of presentation in the hospital wards in our country. The aim of the study was to find out the common causes of ascites by evaluating the clinical presentations along with the ascitic fluid study and other routine and related investigations followed by observing the short-term outcome of the patients with ascites during their hospital tenure.

Materials and methods: It is a descriptive observational study carried out in Medicine Department of Chittagong Medical College Hospital (CMCH) over a period of one year (October 2008- September 2009). Hundred consecutive adult patients admitted in different units of Medicine Department, CMCH with ascites were the subjects of this study. After selection of cases detailed clinical history was taken and elaborate physical examination was done. Common criteria for data collection were followed in every case. Ascitic fluid was collected and examined in all 100 cases. Selected investigations were designed considering the symptomatology and systems affected and reserved for those cases where symptoms and signs were strongly in favour of the diagnosis that needs to be investigated accordingly. All the data were computed and analysed with proper statistical methods.

Results: Data analysis of the present study reveals that Cirrhosis of liver is the commonest cause of ascites (50%). Next two major causes are Tubercular Peritonitis (21%) and Congestive Cardiac Failure (14%). Other important causes include hepatocellular carcinoma (7%) Su-bacute Hepatic Failure (3%) Intra-abdominal malignancy (Except hepatocellular Carcinoma) (3%) and Nephrotic Syndrome (1%). Clinical presentations have shown that most of the patients had multiple and variable presentations. Serum ALP, AST, ALT, Ascitic Fluid Total Protein (AFTP) (F=5.04, p=0.0009 <0.05) Serum Ascitic Fluid Albumin Gradient (SAAG) are found to be statistically significant. Total 76% patients improved with treatment, condition of 11% patients were static and 1% deteriorated. 9% patients of this study died during hospital stay in spite of appropriate treatment measures. 3% of them died of grade IV hepatic encephalopathy, 2% died of complications of very late stage of congestive cardiac failure. Rest 4% were case of hepatocellular carcinoma on top of cirrhosis of liver.

Conclusion: Results of this study offers an overview of aetiology, clinical presentation and short-term outcome of the patients with ascites reporting to a tertiary level hospital in this zone.

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Introduction

Accumulation of intra peritoneal fluid in excess is referred to as ascites. It is an important clinical manifestation that patient to a significant underlying illness¹. As such it poses a diagnostic and therapeutics challenge to physicians because the causes are different in different settings. The patients admitted in the hospital wards are mostly advanced cases with ascites as a late manifestation of the diseases, whereas mild ascites may be present in various diseases. The clinical manifestations of ascites can vary from asymptomatic patients to patients presenting with increase abdominal

girth, loss of satiety, respiratory distress depending upon the amount of fluid accumulated in the abdomen. Clinically ascites can be detected by shifting dullness and fluid thrill but often hard to detect until the amount exceeds 1 litre and in obese. USG can help in detecting minimum amount and ascitic fluid study is the most rapid and cost effective way to diagnose aetiology².

Though a provisional diagnosis can be made by physical examinations and routine investigations but diagnostic ascitic fluid analysis, especially Ascitic Fluid Total Protein (AFTP) and Serum/Ascitic Albumin Gradient (SAAG) always give important clues to the diagnosis. Majority of the patients of whole Chattogram zone come to get admitted in Chittagong Medical College. So, we opted to carry out the study here with an objective to make an effort to find out the aetiology of ascites, to correlate aetiology with clinical presentations and the findings of ascitic fluid study, and other important related investigations and to establish the significance of the results of these investigations to diagnose a case and to obtain an idea about the short-term outcome of the diseases presented with ascites in this zone.

Materials and methods

Hundred consecutive adult patients with ascites admitted in any of the three units of Medicine department of CMCH were subjects of this study irrespective of age & sex. Ascites was confirmed by aspiration in every case. After selection of cases a thorough clinical history was taken with a view to obtain maximum possible information regarding the mode of onset, duration, and progress of ascites. The merge of associated symptom related to other systemic affection were also taken in consideration. Each patient was then subjected to elaborate physical examinations with particular emphasis on those specific for confirmation of ascites (Shifting dullness, ballotment or dipping, puddle sign). Aspiration of ascitic fluid or paracentesis was done, maintaining all aseptic measures after taking consent from the patient or patients attendant. A needle was inserted mid way of spinoumbilical line in left lateral position as in this location the wall is thinner and with a large pool of fluid than in midline. The procedure was done under local anaesthesia. Simple haematological parameters like Hb%, ESR, blood counts and simple biochemical parameters like Serum total protein, albumin and hepatic enzymes were done. Ascitic fluid study (Physical, biochemical, cytology, gram staining, AFB staining, culture etc.) done in almost all cases. Imaging techniques like CXR, USG of whole abdomen, echocardiography, barium swallow and barium meal X-ray (In selected cases), were done. Liver biopsy carried out in selective cases and the findings were correlated with clinical diagnosis. Other investigations like HbsAg, Anti HCV,

endoscopy of upper GIT, Alfaeto Protein (AFP) and relevant urinary investigations like total urinary protein in 24 hrs were done where necessary. All collected data were plotted on a predesigned data sheet. Data were expressed in terms of frequency and percentage. Before commence the study ethical approval was obtained from proper authorities.

Results

Present study results show that the major cause of ascites is Cirrhosis of liver (50%). Next to Cirrhosis of liver two other major causes are Tubercular peritonitis (21%) and Congestive cardiac failure (14%). The other important causes found are Hepatocellular Carcinoma (HCC) (7%) Sub-acute hepatic failure (3%) Intra-abdominal malignancy except HCC (3%) Nephrotic syndrome (1%) & Malnutrition (1%).

Common clinical presentations found during brief history taking and thorough clinical examinations are shown in Table II [Distribution of symptoms among the study patients in different diseases] and III [Distribution of signs among the study patients in different diseases].

Table I Aetiology of Ascites [n=100]

Diagnosis	Number	Percent (%)
1 Cirrhosis of liver	50	50
2 Tubercular peritonitis	21	21
3 Congestive cardiac failure	14	14
4 Hepatocellular Carcinoma (HCC)	07	7
5 Subacute hepatic failure	03	3
6 Intra-abdominal malignancy other than HCC	03	3
7 Nephrotic syndrome	01	1
8 Malnutrition	01	1

Distribution of symptoms among the study patients in different diseases have been shown in Table II. It is observed that swelling of abdomen was an obvious symptom among all study patients. Loss of appetite, generalized weakness, loss of weight were common complaints of most cases of this study. Yellow coloration of eye and urine was found in all cases (100%) of ascites due to Hepatocellular Carcinoma and Subacute hepatic failure, and in 56% patients with ascites due to cirrhosis of liver. Patients with ascites due to Tubercular peritonitis came with the complaints of fever most (84%). Abdominal pain was complained by all the patients of Intra-abdominal malignancy except hepatocellular carcinoma. 70% and 66.6% patients with ascites due to tubercular peritonitis and subacute hepatic failure also presented with pain in abdomen. Difficulty in breathing or

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breathlessness complained by 50% of patients with ascites due to congestive cardiac failure. Patients with ascites due to Cirrhosis of liver and Congestive cardiac failure also presented with the symptom of swelling of leg (43.9% & 35.9% respectively). 4 (28%) of the patients with ascites due to Congestive cardiac failure mentioned scanty urine as chief complaints.

Table II Distribution of Symptoms among the study patients in different diseases

Symptoms	Cirrhosis of liver (50)	Tubercular peritonitis (21)	Intra-abdominal malignancy other than hepatocellular Ca (3)	Hepatocellular Carcinoma on CLD (7)	Sub-acute hepatic failure (3)	Congestive cardiac failure (14)
Swelling of the abdomen	50 (100%)	21 (100%)	3 (100%)	7 (100%)	3 (100%)	14 (100%)
Loss of appetite	38 (76%)	21 (100%)	3 (100%)	7 (100%)	3 (100%)	2 (14%)
Generalized weakness	40 (80%)	21 (100%)	3 (100%)	6 (85.7%)	3 (100%)	6 (42%)
Loss of weight	28 (56%)	21 (100%)	3 (100%)	7 (100%)	1 (33.3%)	
Yellow coloration of eye and urine	28 (56%)		1 (33.33%) in Ca pancreas	7 (100%)	3 (100%)	
Fever	22 (44%)	18 (84%)		2 (28%)	1 (33.3%)	
Pain in the abdomen	12 (29.2%)	15 (70%)	3 (100%)	1 (14%)	2 (66.6%)	2 (40%)
Breathlessness						7 (50%)
Leg swelling	18 (43.9%)					5 (35.9%)

Signs that are found commonly in different diseases are presented in Table III. Table III reveals that anaemia was present in 100% patients with sub-acute hepatic failure, in 84% patients with Cirrhosis of liver & Tubercular peritonitis, 50% patients with congestive cardiac failure, 42% patients with HCC. Jaundice was found in 100% patients of HCC and sub-acute hepatic failure and 56% patients of congestive cardiac failure. Out of 3, jaundice was found in only 1 patient with intra-abdominal malignancy. Oedema was found in all cases of congestive cardiac failure. In patients with cirrhosis of liver, HCC, sub-acute hepatic failure and tubercular peritonitis oedema was found in 76%, 42%, 33.3% and 28% cases respectively. Hepatomegaly was found in every case of ascites due to HCC and Congestive cardiac failure. 10 out of 21 patients with tubercular peritonitis and 4 out of 50 patients with cirrhosis of liver had hepatomegaly. Splenomegaly was found in 64% patients with cirrhosis of liver. 23.8% patients with tubercular peritonitis and 14% patients with HCC also had splenomegaly. 18 (84%) patients of ascites due to tubercular peritonitis had fever, among them 15 (75%) showed tachycardia. 7 out of 14 patients (50%) of ascites due to congestive cardiac failure had dyspnoea

and in 2 of them crepitation at lung base heard on auscultation. In patients with ascites due to cirrhosis of liver dyspnoea and crepitation at lung base were present in 28% and 4% patients respectively. Flapping tremor was found in 33.33% and 24% patients of ascites due to sub-acute hepatic failure and cirrhosis of liver respectively.

Table III Distribution of signs among the study patients in different diseases

Signs	Cirrhosis of Liver (50)	Tubercular peritonitis (21)	Intra-abdominal malignancy other than hepatocellular carcinoma (3)	Hepatocellular carcinoma (HCC) (7)	Sub-acute hepatic failure (3)	Congestive cardiac failure (14)
Anaemia	42 (84%)	18 (84%)		3 (42%)	3 (100%)	7 (50%)
Ascites	50 (100%)	20 (100%)	3 (100%)	7 (100%)	3 (100%)	14 (100%)
Jaundice	28 (56%)		1 (33.33%)			
	7 (100%)	3 (100%)	-			
Oedema	38 (76%)	6 (28%)		3 (42%)	1 (33.33%)	14 (100%)
Hepatomegaly	4 (8%)	10 (47.6%)		7 (100%)		14 (100%)
Splenomegaly	32 (64%)	5 (23.8%)		1 (14%)		
Fever	22 (44%)	18 (84%)		2 (28%)	1 (33.33%)	
Tachycardia		15 (75%)				7 (50%)
Dyspnoea	14 (28%)					7 (50%)
Creptitation at lung base	2 (4%)					2 (14%)
Flapping tremor	12 (24%)				1 (33.33%)	

Besides the abovementioned symptoms and signs there were other major clinical features which were also noted during clinical examinations of the study patients.

On clinical examination of patients with ascites due to cirrhosis of liver vascular spider was found in 48% cases and engorged abdominal veins found in 44% cases. Other prominent clinical features in these patients were hematemesis/melena (28%), koilonychia (28%), palmar erythema (20%), and hepatic coma (24%). Among the male patients with cirrhosis of liver gynecomastia and testicular atrophy found in 25% and 50% cases respectively.

Alteration of bowel habit (70%) and lymphadenopathy (28%) were found on clinical examination of patients with ascites due to tubercular peritonitis.

Lump in the abdomen was found in all the patients of ascites due to intra-abdominal malignancy other than HCC (Ca stomach and Lymphoma).

Hematemesis/melena, koilonychias, vascular spider, bruit in the liver were found in 1 of total 7 patients of ascites due to HCC. Testicular atrophy also found in 2 of them. 100% cases with abdominal mass was the prominent feature in patients with HCC.

All 14 cases of ascites due to congestive cardiac failure presented with engorged neck vein. Cardiac murmur was found in 4 of them.

Table IV Distribution of findings of haematological investigations among study patients

Diseases	Hemoglobin		Total leucocyte count			Prothrombin time	
	Anaemic	Not Anaemic	Normal	Leucopenia	Leucocytosis	Normal	Raised
Cirrhosis of Liver, n=50	38 (72%)	12 (24%)	32 (64%)	02 (04%)	16 (32%)	28 (56%)	22 (44%)
Tubercular Peritonitis, n=21	18 (85%)	3 (14%)	12 (57%)	0 (0%)	9 (42%)	21 (100%)	0 (0%)
Congestive cardiac failure, n=14	8 (57%)	6 (42%)	09 (64%)	00 (0%)	06 (42%)	10 (71%)	04 (28%)
Hepatocellular carcinoma, n=07	7 (100%)	0 (0%)	05 (71%)	00 (0%)	02 (28%)	02 (28%)	05 (71%)
Subacute hepatic failure, n=3	3 (100%)	0 (0%)	03 (100%)	0 (0%)	0 (0%)	0 (0%)	03 (100%)
Intra-abdominal malignancy							
without HCC, n=3	3 (100%)	0 (0%)	0 (0%)	0 (0%)	03 (100%)	03 (100%)	00 (0%)
Malnutrition, n=1	1 (100%)	0 (0%)	0 (0%)	0 (0%)	01 (100%)	01 (100%)	00 (0%)
Nephrotic syndrome, n=1	01 (100%)	0 (0%)	01 (100%)	0 (0%)	0 (0%)	01 (100%)	0 (0%)

Findings of haematological investigations [Table IV] among study patients express that all the patients of ascites due to HCC, sub-acute hepatic failure, intra-abdominal malignancy other than HCC, malnutrition and nephrotic syndrome were anaemic. Anaemia was found in 85.71%, 76% and 57.14% of patients of ascites due to tubercular peritonitis, cirrhosis of liver and congestive cardiac failure respectively.

Total leucocyte count was normal in most cases. In cases of ascites due to tubercular peritonitis and congestive cardiac failure leucocytosis was seen in 42.85% of patients. Patients with cirrhosis of liver also showed leucocytosis in 32% cases.

Raised prothrombin time was striking feature in cases of patients with HCC and sub-acute hepatic failure. 44% of patients with Cirrhosis of liver also showed rise in prothrombin time.

Table V Distribution of findings of biochemical investigations among study patients

Disease	Serum Bilirubin		Serum alkaline phosphatase		Serum ALT		Serum AST		Serum total protein
	Normal	Raised	Normal	Raised	Normal	Raised	Normal	Raised	
Cirrhosis of Liver, n=50	12 (24%)	38 (76%)	42(84%)	08(16%)	08(16%)	42(84%)	10(20%)	40(80%)	61.29±3.6
Tubercular Peritonitis, n=21	21(100%)	00	21(100%)	00	21(100%)	00	21(100%)	00	61.66±7.80
Congestive cardiac failure, n=14	14(100%)	00	14(100%)	00	14(100%)	00	10(71%)	04(28%)	64.60±6.5
Hepatocellular carcinoma, n=07	00	07(100%)	03(42%)	04(57%)	00	07(100%)	00	07(100%)	66.70±7.8
Sub-acute hepatic failure, n=3	02(66%)	01(33%)	01(33%)	02(66%)	01(33%)	02(66%)	01(33%)	02(66%)	62.50±9.35
Intra-abdominal malignancy without HCC, n=3	03(100%)	00	01(33%)	02(66%)	01(33%)	02(66%)	02(66%)	01(33%)	64.25±4.29
Malnutrition, n=1	01(100%)	00	01(100%)	00	01(100%)	00	01(100%)	00	
Nephroticsyndrome, n=1	01(100%)	00	01(100%)	00	01(100%)	00	01(100%)	00	48.0±5.3

Biochemical investigations of the study patients shows that serum bilirubin level was raised in 100% patients with HCC, in 76% patients with cirrhosis of liver, and in 33.33% patients with sub-acute hepatic failure. In other cases, serum bilirubin level was normal.

In patients of Tubercular peritonitis, malnutrition and nephrotic syndrome serum alkaline phosphatase, serum ALT and serum AST level were found normal. In patients with congestive cardiac failure Serum AST level were found raised in 28.5% and Serum alkaline phosphatase, serum ALT level found normal. Raised level of Serum alkaline phosphatase, Serum ALT and serum AST were found in patients with ascites due to HCC and sub-acute hepatic failure. Among the patients with intra-abdominal malignancy other than HCC 66.66% patients had raised serum alkaline phosphatase and serum ALT level.

Serum total protein found to be raised in majority of the causes except Nephrotic syndrome.

Table VI Distribution of findings of ascetic fluid analysis [Characteristics (Gross appearance, cytology/malignant cells) Ascitic Fluid Total Protein (AFTP) Serum Ascitic Fluid Albumin Gradient (SAAG)] among the study patients

Diseases	Gross appearances	Cytology/malignant cells	Ascitic fluid total protein (AFTP)		Serum Ascitic Fluid Albumin Gradient (SAAG)	
			<25g/l	≥25g/l	<1.1g/l	≥1.1g/l
Cirrhosis of Liver, n=50	Straw color-38; Clear-10; Haemorrhagic-02	Mesothelial cells with few lymphocytes. Plenty of polymorphs in 2 cases. /malignant cells absent.	43(86%)	07(14%)	07(14%)	43(86%)
Tubercular Peritonitis, n=21	Straw color-21	Plenty of lymphocytes	00	21(100%)	21(100%)	00
Congestive cardiac failure, n=14	Clear-10, Straw color-04	Mesothelial cells with few lymphocytes.	12(85%)	02(15%)	00	14(100%)
Hepatocellular carcinoma, n=07	Hemorrhagic-05, Straw color-02	Plenty of RBC & mesothelial cells. No malignant cells seen	01(14%)	06(86%)	07(100%)	00
Subacute hepatic failure, n=3	Straw color-02, clear-01	Mesothelial cells with few lymphocytes.	01(33%)	02(66%)	01(33%)	02(66%)
Intraabdominal malignancy without HCC, n=3	Straw color-01, hemorrhagic-02	Plenty of RBC & mesothelial cells.	00	03(100%)	03(100%)	00
Malnutrition, n=1	Straw color-01	Few mesothelial cells with lymphocytes.	01(100%)	00	00	01(100%)
Nephrotic syndrome, n=1	Clear-1	Few mesothelial cells & occasional lymphocytes.	01(100%)	00	00	01(100%)

From the findings of ascitic fluid analysis as shown in Table VI it is seen that the protein level was in transudative range in cirrhosis of liver, nephrotic syndrome & congestive cardiac failure, whereas it was in exudative range in other cases. No organism was found in cytology except in one patient with cirrhosis of liver where it was E.coli; no AFB or malignant cells found in culture in any of the patients with HCC. Ascitic Fluid Total Protein (AFTP) was low in cirrhosis of liver, congestive cardiac failure and high in tubercular peritonitis, hepatocellular carcinoma, other intra-abdominal malignancy other than hepatocellular carcinoma.

Serum Ascites Albumin Gradient (SAAG) is high in cirrhosis of liver, congestive cardiac failure, sub-acute hepatic failure and low in tubercular peritonitis, hepatocellular carcinoma and other intra-abdominal malignancy.

Table VII Short term outcome of the patients of ascites due to various diseases during hospital tenure

Diseases	Improved	Static	Deteriorate	Died	Referred
Cirrhosis of liver [n=50]	39 (78%)	8(16%)	0	3(6%)	0
Tubercular peritonitis	21(100%)	0	0	0	0
Congestive cardiac failure	12(85%)	0	0	2(15%)	0
Sub-acute hepatic failure	3(100%)	0	0	0	0
HCC		2(28%)	1(14%)	4(42%)	0
Intra-abdominal malignancy other than HCC	0	0	0	0	3(100%)
Malnutrition	0	1(100%)	0	0	0
Nephrotic syndrome	1(100%)	0	0	0	0

Table VII shows a short term outcome of the patients of ascites due to various diseases during their hospital tenure. Among total of 100 study patients of ascites 76 were improved with treatment, condition of 11 remained static, 3 patients were referred to other department for further managements, condition of 1 patient deteriorated and 9 died.

Outcome of the patients of ascites due to tubercular peritonitis, sub-acute hepatic failure and nephrotic syndrome found excellent. All of them improved with proper treatment.

The majority of the patients of ascites due to cirrhosis of liver were admitted with some complications and out of 50, 39 patients improved with treatment, 8 did not despite of medications and 3 died due to grade IV hepatic encephalopathy despite appropriate measures.

Most of the patients of ascites due to congestive cardiac failure improved with medication but 2 of them died as they came at very late stage of cardiac failure. All necessary managements were provided instantly.

Among 3 cases of intra-abdominal malignancy other than HCC, 1 case was Ca stomach, 1 was Ca pancreas

and the other one was a case of lymphoma. Patients with Ca stomach and Ca pancreas were referred to Surgery ward and the patient with lymphoma was referred to Oncology department of CMCH.

4 of the patients of ascites due to HCC died as they had HCC on top of cirrhosis of liver. Among rest of the patients (3) with HCC, condition of 2 remained static after proper management and deterioration of condition seen in 1 patient.

Discussion

This study was focused mainly on the incidence of different underlying causes, mode of presentation of each disease, different common investigations and results to reach the diagnosis and short-term outcome of these diverse diseases during hospital stay of the patients.

Cirrhosis of Liver is the major cause of ascites in this study and it was 50% of total study patients. The result of incidence of Cirrhosis as underlying cause of ascitic patients is consistent with the studies of Cheijina, Lawrence and Saha where the incidences were 51%, 52% and 60% respectively^{2,3,4}. The next two major causes found in our study are tubercular peritonitis (21%) and congestive cardiac failure (14%). Other important causes found were hepatocellular carcinoma HCC (7%), intra-abdominal malignancy other than HCC (3%), sub-acute hepatic failure (3%) and single case of Nephrotic syndrome and malnutrition. Similar findings revealed in a study of 100 cases of ascites by Mahmood which shows incidence of tubercular peritonitis 9%, congestive cardiac failure 6%, HCC 8%, intra-abdominal malignancy other than HCC 4%, nephrotic syndrome 3%, as the common underlying causes of ascites next to Cirrhosis (68%)⁵.

In cirrhosis of liver hepatomegaly may be early presentation which usually shrinks later on and commonly found in alcoholic cirrhosis which incidences are less in our country then the studies performed in western countries. Splenomegaly also is a common finding in cirrhosis especially with portal hypertension. Ascites, increasing jaundice, signs of hepatic encephalopathy, portal hypertension with variceal bleeding in the form of hematemesis and melena all are signs of decompensated cirrhosis. About 14% patients presents with normal serum protein though hypoproteinaemia is the major factor in the pathogenesis of ascites. Serum ascitic fluid albumin gradient is high in 86% patients which indicates portal hypertension along with same number of patients having transudative in nature and other 14% are exudative ascitic fluid in nature. Bangladesh has highly endemic HbsAg carrier rate with no difference in our study we get 66% of our patients were HbsAg positive and Anti HCV had been detected in 28% of cases. The deaths of

the three patients with ascites presented to us were in very late stage of grade 4 hepatic encephalopathy. Tubercular peritonitis was found to be the second leading cause of ascites in present study. These patients had classical presentation of fever, anorexia, weight loss, abdominal pain along with ascites. These presentations correlate with other studies^{6,7,8,9,10,11}. Alteration of bowel, anaemia are also common findings in these patients. Hepatomegaly was present among 47.61% patients of tubercular peritonitis. Different studies showed incidence of hepatomegaly in patients of ascites due to tubercular peritonitis as high as 83% to as low as 14%.⁴ Anaemia and high ESR are characteristics of tubercular peritonitis. In our series 100% patients had high ESR. Tuberculin skin test was positive in 60% of the patients with ascites due to tubercular peritonitis. It correlates with the Bastani B et al, who reported 61% tuberculin skin test positive cases¹². But Lisehora GB reported lower incidence of tuberculin skin test positivity of 31.25% (6 out of 15 patients)¹³. Chest X-ray showed patchy opacity in the apical region in 5 cases (23.8%) and these patients were having associated pulmonary tuberculosis. In different studies radiographic abnormalities of chest was associated in 19-50% cases^{14,15,16}. Ascitic fluid was straw in colour and exudative in ascitic fluid study in all cases of present study. The result is consistent with other authors^{17,11,18}. Plenty of lymphocytes found in cytology of ascitic fluid. AFB was not found in any of cases. In our study culture could not be done due to logistic problem. Peritoneal biopsy could not be carried out because of lack of facilities and instruments needed or due to non-co-operation of the patient or patient's condition did not support. Response to chemotherapy was excellent in all cases and as such reinforced the clinically suspicious diagnosis. All the cases were advised to continue chemotherapy for 6 months. Among the fourteen cases of congestive cardiac failure ten cases (71%) were related with ischaemic heart disease and ischaemic cardiomyopathy, two (14%) were dilated cardiomyopathy (Post-partum) and one was with multiple valvular heart disease. Ascitic fluid was found transudative in all cases except in two where the fluid found to be exudative. In 76% patients, SAAG was ≥ 1.1 g/dl. With appropriate treatment majority of the patients improved except two who died. These two patients came to hospital at a very late stage with very poor general condition and had history of multiple admissions to hospital. Next major cause of ascites is HCC with 7% incidence. In present study, patients presented in advanced state i.e with ascites, abdominal lump etc. in comparison to other countries as in our country due to ignorance, poverty and wrong treatment with quacks prevent them to present early in the course of the disease^{15,14,19,20,21}.

History of viral hepatitis was present in 4 out of 7 patients and one patient gave history of alcohol intake. Ascitic fluid in 5 cases of HCC were haemorrhagic and in two cases it were straw in color. Except one patient ascitic fluid was exudative in all cases of HCC. The sugar content was normal and reflected almost same level as that of the blood. Cytology showed the most significant finding in favour of malignancy was the presence of plenty of RBC. In present series no malignant cell was found in any case of HCC. HbsAg was positive in 2 patients and 2 others were anti HCV positive. Serum Alpha feto protein level was > 20 ng/ml in all cases of HCC and in 2 patients it were >500 ng/ml (28.57%). In different text books mentioned that in 60% cases of ascites due to HCC there will be raised serum alphafetoprotein level¹⁹. Four of the patient died during hospital stay and all 4 had cirrhosis. Among them 2 were HbsAg positive and 2 were Anti HCV positive. These patients came at a very late stage and with complications of HCC to the hospital.

Among three cases of intra-abdominal malignancy other than HCC one was diagnosed as a case of Ca Stomach. Ascitic fluid study revealed plenty of RBC and few mesothelial cells. The patient was referred to Surgery department where the patient was treated by palliative bypass surgery. Another one was diagnosed as Ca head of the pancreas and referred to Surgery Department for management. Third patient was diagnosed as a case of Hodgkins Lymphoma and was referred to Oncology Department for radiotherapy for pain and pressure effects and chemotherapy as well.

The three cases of sub-acute hepatic failure presented with ascites, jaundice, generalized weakness and anorexia. Other presentations were fever, flapping tremor, abdominal pain, itching, and oedema. Their duration of illness was between 2 months to 5 months and there were no stigmata of chronic liver disease clinically and on investigations.

Beside these cases one of the patients of this study was diagnosed as a case of nephrotic syndrome and one was diagnosed as a case of malnutrition.

Limitation

Results of our study might not give the actual impression, as the number of the study patients were very small and was single centred. If the study could be done involving multiple centres all over the country, a national can picture can be obtained. Also if we could monitor and follow up the patients by communicating with them after discharge and encourage them for regular follow up. Throughout the disease course then we could have drawn more conclusive results regarding outcome of the patients with ascites and then the unresolved factors of current study could be brought into light.

Conclusion

The aim of the study was to find out the common causes of ascites by correlating the common clinical presentations with important investigations like ascitic fluid study and related investigations along with gaining an idea about the short-term outcome of the diseases presented with ascites in a tertiary level hospital like CMCH. At a tertiary set up the patients with ascites are hospitalized mostly in advanced stages as a late manifestation of various diseases. Careful evaluation of variable clinical presentations, correlating them with results of routine and specific investigations plays a significant role to find out the underlying etiologies. Proper management of underlying diseases results in excellent outcome is majority of the patients. In this study it has been seen that most mortality accused in late stage cirrhosis and in congestive cardiac failure. Late stage intra abdominal malignancies were referred to specialized word or to higher centre. This reflects proper management in due time at CMCH, only government tertiary hospital for general peoples of Chattogram Zone. To draw a real picture nationwide an intensive study involving multiple centres with a large study population over a long period is recommended.

Disclosure

All the authors declared no competing interest.

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