

# Study of Etiological and Clinical Profile of Ascites in a Tertiary Care Hospital in Seemanchal Region of Bihar

Md Jamal Uddin<sup>1</sup>, Mehre Darakhshan Mehdi<sup>2</sup>, Sudesh Kumar<sup>3</sup>, Mohabbat Pal Singh<sup>4</sup>

<sup>1</sup>Associate Professor, Department of Medicine, Mata Gujri Memorial Medical College, Kishanganj, Bihar, India.

<sup>2</sup>Associate Professor, Department of Pharmacology, North Bengal Medical College, Darjeeling, West Bengal, India.

<sup>3</sup>Associate Professor, Department of Paediatrics, Mata Gujri Memorial Medical College, Kishanganj, Bihar, India.

<sup>4</sup>Junior Resident, Department of Medicine, Mata Gujri Memorial Medical College, Kishanganj, Bihar, India.

Received: July 2020

Accepted: July 2020

## ABSTRACT

**Background:** Ascites is the collection of fluid in the potential space of the peritoneal cavity and is a common clinical condition encountered by clinicians in medical practice. Aetiology of ascites is multiple but alcoholic liver disease, tuberculosis and intra-abdominal malignancies are the major causes. **Methods:** Retrospective data of 92 patients were observed in this study to analyze the leading causes of ascites in Seemanchal Region of Bihar. **Results:** In this study out of 92 cases, in 37 cases (40%), in 32 cases (35%) and in 7 cases (7%) the leading cause of ascites was found to be alcoholic liver disease, tuberculosis and malignancy respectively. **Conclusion:** In Seemanchal region of Bihar the leading cause of ascites was alcoholic liver disease followed by tuberculosis and malignancy.

**Keywords:** Ascites, Cirrhosis, Malignancy, Peritoneal, Tuberculosis

## INTRODUCTION

The word ascites is a Greek origin (askos) and means bag or sac. Ascites describes the condition of pathologic fluid collection within the abdominal cavity.<sup>[1,2]</sup> Overwhelmingly, the most common cause of ascites is portal hypertension related to cirrhosis; however, clinicians should remember that malignant or infectious causes of ascites can be present as well, and careful differentiation of these other causes are obviously important for patient care.<sup>[3]</sup> The differential diagnosis of ascites remains a problem in clinical practice. Treatment decisions are directed according to the etiological profile. Diagnostic paracentesis has become increasingly important as the key initial investigation in the assessment of ascites.<sup>[4,5]</sup> Cirrhotic patients at a time invariably present with ascites and are a marker of decompensation. In these cases, severity has to be evaluated and the case should be managed appropriately with salt restriction, diuretics, therapeutic paracenteses, or surgical shunt procedure alone or in combination.<sup>[6]</sup> Due to the endemicity of tuberculosis in Seemanchal area of Bihar, tuberculous peritonitis also needs to be kept in

ascites in India.<sup>[8]</sup> Peritoneal tuberculosis leads to ascites in only 2% cases in the Western world.<sup>[1,4]</sup> Epidemiological data on the etiological aspects of ascites are insufficient from this region and has not yet been reported from Seemanchal area of Bihar.

## MATERIALS AND METHODS

The observational hospital-based study was carried out in the Department of Medicine of Mata Gujri Memorial Medical College & Lions Seva Kendra Hospital, Kishanganj. This is a retrospective study where data from all the cases diagnosed with ascites in the Department of Medicine from July 2019 to May 2020 were included. Data was taken from medical records department. All 92 indoor patients who were diagnosed as ascites on the basis of history, physical examination, ultrasonography, and of age >18 years were included in the study after getting the informed consent. Patients who had a diagnostic paracentesis within 2 weeks (cause was already established), secondary cause of peritonitis and unwilling to participate in the study were excluded. The patients included in the study were evaluated by detailed history. Questionnaire regarding risk factors was included in history which included: Alcohol history including amount and duration of alcohol intake, blood transfusion, surgery, needle prick, tattoo, and high-risk behavior. Detailed examination was performed in every case and clinical presentation was recorded. Ascitic fluid paracentesis was done under all aseptic conditions. Ascitic fluid was analyzed for biochemistry, cytology, gram staining, acid fast bacillus staining, malignant cells, culture, and sensitivity. Serum- ascites albumin gradient (SAAG) and

### Name & Address of Corresponding Author

Dr. Mehre Darakhshan Mehdi  
Associate Professor  
Department of Pharmacology  
North Bengal Medical College  
Darjeeling, West Bengal,  
India

differential and culture growth which is the gold standard test for diagnosis tuberculous peritonitis.<sup>[7]</sup> Tuberculosis is seen in 30% of the patients with

adenosine deaminase (ADA) was estimated in all patients. For culture, 10 ml of ascitic fluid was inoculated in two blood culture bottles at the bedside and was sent immediately to the microbiology laboratory. Specific etiology-oriented investigations were carried out. Tubercular ascites was diagnosed on the basis of low SAAG (<1.1), high protein (>2.5), ADA more than 40 IU/L, lymphocytic predominance on cytology, and response to antitubercular therapy. Serological markers such as antinuclear antibodies, an antibody against liver- kidney- microsomes, anti-smooth muscle antibodies, immunoglobulin A, tissue transglutaminase antibody were done on the basis of clinical profile and if indicated. Serum ceruloplasmin, urinary copper levels and slit lamp examination for Kayser–Fleischer ring was done if indicated. All obese patients in whom other etiology of cirrhosis was ruled out were placed under non-alcoholic steatohepatitis as a possible cause for cirrhosis. Ultrasound abdomen was done in all patients followed by computed tomography if the ultrasound was inconclusive or there was evidence of hepatocellular carcinoma. Upper gastrointestinal endoscopy was performed in all patients with cirrhosis unless contraindication was present. Severity of disease was done according to Child- Turcotte- Pugh (CTP) score in cirrhosis patients. The study was approved by Institutional Ethics Committee.

## RESULTS

**Table 1: Age wise distribution of Ascites patients.**

Age in year	No of patients	Percentage
18-30	08	08.69
31-40	16	17.39
41-50	22	23.91
51-60	19	20.65
61-70	17	18.46
71-80	10	10.86

This study included 92 patients with age ranging from 18 to 80 years, Table-1 show majority of patients were aged between 41-50 years (n=22, 23.91%), only 08 patients 08.69% admitted with ascites of the age group between 18-30 years. Fifty-six patients (60.86%) were male and 36 patients (39.13%) were female show in Table 2. The male to female ratio was 1.55:1.

**Table 2: Gender wise distribution of Ascites patients.**

Sex	No of patients	Percentage
Male	56	60.86
Female	36	39.13

[Table 3] show the most common etiology of Ascites was Liver cirrhosis (n=37; 40.21%), followed by Tuberculosis (N=32; 34.78%) then Malignancy (n=07; 07.60%), and Congestive Heart Failure (n=05; 05.43%). The least common etiology of Ascites was Hypothyroidism (n=02; 02.17%).

**Table 3: Distribution of ascites patients based on etiology.**

Diagnosis	No of patients	Percentage
Liver cirrhosis	37	40.21
Tuberculosis	32	34.78
Malignancy	07	07.60
Congestive Heart Failure	05	05.43
Chronic kidney disease	04	04.34
Hypothyroidism	02	02.17
Viral	05	05.43

**Table 4: Etiological presentation of patients of Cirrhosis of liver.**

Etiology	No of patients	Percentage
Alcohol	30	81.08
Hepatitis-B	04	10.81
Hepatitis-C	01	02.70
Non-specific causes	02	05.40

[Table 4] show the most common etiology of cirrhosis of liver was alcohol (n=30; 81.08%), followed by Hepatitis-B (n=04; 10.81%). Two patients (05.40%) of cirrhosis of liver was due to non-specific causes. Of 37 patients of cirrhosis, high SAAG (>1.1 g/dl) was observed in 35 (94.59%) patients and 2 (5.40%) patients had low SAAG (<1.1 g/dl). One patient had a high SAAG with high protein (ascitic albumin >2.5 g/dl) and all had ADA >40. Of 37 patients of cirrhotic ascites, a total of 08 (21.62%) patients had peritoneal fluid infection. Among these 08 patients, 03 patients (37.50%) had culture positive SBP. Among the culture, positive patients had Escherichia coli and Enterococcus. Ascitic fluid cytology for malignant cells was positive in 09 (09.78%) patients. Among them, four patients (44.44) had ovarian carcinoma, two patients (22.22%) had gastrointestinal tract malignancy. Among 28 patients of tubercular ascites, 4 (14.28%) patients had acid- fast bacteria (AFB) positive on Ziehl–Neelsen staining.

**Table 5: Clinical presentation of patients of Ascites.**

Sign and symptoms	No of patients	Percentage
Abdominal discomfort	86	93.47
Anorexia	58	63.04
Icterus	40	43.47
Abdominal pain	36	39.13
Nausea and vomiting	36	39.13
Fever	30	32.60
Pallor	28	30.43
Cough	27	29.34
Weight loss	24	26.08
Splenomegaly	22	23.91
Hepatomegaly	20	21.73

[Table 5] The most common clinical feature was abdominal discomfort (n=86; 93.47%), followed by Anorexia (n=58; 63.04%), Icterus (n=40; 43.47%), Splenomegaly (n=22; 23.92%) and Hepatomegaly was (n=20; 21.73%).

## DISCUSSION

Ascites can occur at any age but age specific etiology may differ. Etiology of ascites can be suspected from history and examination, but ascitic fluid analysis is an important investigation to diagnose the cause. In the United States, cirrhosis of liver is the most common cause of ascites (85%), followed by non-hepatic causes such as cardiac failure (3%) and peritoneal malignancy (2%). Approximately 5% of patients with ascites have two or more causes of ascites formation, that is, "mixed" ascites. Usually, these patients have cirrhosis plus one other cause, e.g., peritoneal carcinomatosis or peritoneal tuberculosis.<sup>[9]</sup> The majority of patients who present with ascites have underlying cirrhosis, with the remainder being due to malignancy, heart failure, tuberculosis, pancreatitis, and other rare causes.<sup>[1,5]</sup> In India, cirrhosis of liver is the most common cause of ascites (55%) followed by tuberculosis (30%).<sup>[10]</sup> But in our study, we found that ascites due to cirrhosis of liver constituted the largest group and (n=30; 32.60%) of them were alcohol related. This is very less compared to western countries and average Indian population. The results are comparable to other studies.<sup>[11,12]</sup>

Our study is comparable to the published data though the total percentage of patients with cirrhosis and ascites is less in our study as compared to the Western literature. This is because alcohol is banned in Bihar and tuberculosis is more prevalent in this region. In our study, tuberculosis is the second most common cause of ascites which is comparable to other developing countries and was observed in 32% of patients. Peritoneal tuberculosis accounts for 0.5–1% of all tuberculosis related hospital admissions with an overall mortality rate of 7%.<sup>[13]</sup> In India 10% patients with abdominal tuberculosis present with ascites.<sup>[13]</sup> The yield of organisms on smear and culture is low. Staining for acid fast bacilli is positive in <3 per cent of cases.<sup>[14]</sup> Tuberculous infection of the peritoneum is rare in developed countries but not infrequent in countries with a high prevalence of TB.<sup>[15,16]</sup>

All patients had features of underlying cirrhosis and peritoneal tuberculosis. Peritoneal tuberculosis in the presence of hepatic cirrhosis is a not only a diagnostic problem but a therapeutic challenge also. In a patient of compensated cirrhosis suspect tubercular ascites if patient decompensates or if ascites increases or is resistant ascites despite adequate diuretic treatment and sodium restriction. Symptoms of tubercular activity in the form of anorexia, fever, weight loss are helpful. Tubercular ascites in the setting of cirrhosis reveals a high SAAG, high protein ascites with a lymphocytic predominant high cell count fluid.<sup>[17]</sup> Peritoneal fluid ADA has a sensitivity of 100% and specificity of 97% for making a diagnosis of tubercular ascites.<sup>[18]</sup> Treatment of tuberculosis in patients with underlying

cirrhosis is a challenge because of the compromised liver functions and high risk of hepatotoxicity.<sup>[19]</sup> Malignant ascites was observed in 7.6% of cases in this study.<sup>[24]</sup> Ovarian carcinoma is the most common cause of malignant ascites in our region and the second most common cause is gastrointestinal malignancy. Malignant ascites is a sign of peritoneal carcinomatosis, the presence of malignant cells in the peritoneal cavity.

## CONCLUSION

In this study the authors have observed various major aetiological factors that are the leading causes of ascites in Seemanchal region of Bihar. Cirrhosis of liver and Tuberculosis are the major causes of ascites in this region. The other significant causes of ascites were observed to be malignancy and congestive heart failure. It is advisable for the clinician to consider this broad range of aetiologies while evaluating a patient with ascites.

## REFERENCES

1. Moore KP, Wong F, Gines P, Bernardi M, Ochs A, Salerno F, et al. The management of ascites in cirrhosis: Report on the consensus conference of the International Ascites Club. *Hepatology* 2003;38:258-66.
2. Hyatt RE, Smith JR. The mechanism of ascites, a physiologic appraisal. *Am J Med* 1954;16:434
3. Bruce R. Bacon, Harrison, s Principal of Internal medicine 20th edition, page 2411s.
4. Runyon BA; AASLD Practice Guidelines Committee. Management of adult patients with ascites due to cirrhosis: An update. *Hepatology* 2009;49:2087-107
5. Kuiper JJ, van Buuren HR, de Man RA. Ascites in cirrhosis: A review of management and complications. *Neth J Med* 2007;65:283-8.
6. Biecker E. Diagnosis and therapy of ascites in liver cirrhosis. *World J Gastroenterol* 2011;17:1237.
7. Sanai FM, Bzeizi KI. Systematic review: Tuberculous peritonitis—presenting features, diagnostic strategies and treatment. *Aliment Pharmacol Ther* 2005;22:685-700.
8. Amarapurkar DN, Kalro RH, Desai HG. Peritoneoscopy in diagnosis of ascites. *J Assoc Physicians India* 1991;39:933-5.
9. Runyon BA, Montano AA, Akriviadis EA, Antillon MR, Irving MA, McHutchison JG. The serum-ascites albumin gradient is superior to the exudate-transudate concept in the differential diagnosis of ascites. *Ann Intern Med* 1992;117:215-20.
10. Amarapurkar DN, Kalro RH, Desai HG. Peritoneoscopy in diagnosis of ascites. *J Assoc Physicians India* 1991;39:933-5.
11. Maskey R, Karki P, Ahmed SV, Manandhar DN. Clinical profile of patients with cirrhosis of liver in a tertiary care hospital, Dharan, Nepal. *Nepal Med Coll J* 2011;13:115-8.
12. Bindu CB, Nayak UB, Souza SD. A study of etiological factors in ascities – A cross sectional study. *Int J Recent Trends Sci Technol* 2014;12:494-6.
13. Dineeen P, Homan WP, Grafe WR. Tuberculous peritonitis: 43 years' experience in diagnosis and treatment. *Ann Surg* 1976;184:717-22.
14. Mugula DD. Abdominal tuberculosis in Chingola-Zambia: Pattern of presentation. *East Cent Afr J Surg* 2006;11:41-6.
15. Sharma MP, Bhatia V. Abdominal tuberculosis. *Indian J Med Res* 2004;120:305-15.

16. Uzunkoy A, Harma M, Harma M. Diagnosis of abdominal tuberculosis: Experience from 11 cases and review of the literature. *World J Gastroenterol* 2004;10:3647-9.
17. Kim NJ, Choo EJ, Kwak YG, Lee SO, Choi SH, Woo JH, et al. Tuberculous peritonitis in cirrhotic patients: Comparison of spontaneous bacterial peritonitis caused by *Escherichia coli* with tuberculous peritonitis. *Scand J Infect Dis* 2009;41:852-6.
18. Riquelme A, Calvo M, Salech F, Valderrama S, Pattillo A, Arellano M, et al. Value of adenosine deaminase (ADA) in ascitic fluid for the diagnosis of tuberculous peritonitis: A meta-analysis. *J Clin Gastroenterol* 2006;40:705-10.
19. Kumar N, Kedarisetty CK, Kumar S, Khillan V, Sarin SK. Antitubercular therapy in patients with cirrhosis: Challenges and options. *World J Gastroenterol* 2014;20:5760-72.
20. Runyon BA. Care of patients with ascites. *N Engl J Med* 1994;330:337-42.

**Copyright:** © Annals of International Medical and Dental Research. It is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

**How to cite this article:** Uddin J, Mehdi MD, Kumar S, Singh MP. Study of Etiological and Clinical Profile of Ascites in a Tertiary Care Hospital in Seemanchal Region of Bihar. *Ann. Int. Med. Den. Res.* 2020; 6(5):ME18-ME21.

**Source of Support:** Nil, **Conflict of Interest:** None declared