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A Study on 100 Cases of Ascites Etiology and Occurrence of Ascites in 100 Adult Patients Admitted With A Acute Medical Illness

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ABSTRACT
Introduction: *The term ascites is derived from the Greek word "ASKOS" (bladder, belly, bag) and denotes the presence of excessive fluid in the peritoneal cavity. Many diseases are known to lead to the formation of free fluid within the peritoneal cavity. Basically the causes of ascites may be grouped into those conditions in which the pathological process does not directly affect the peritoneum and those in which the peritoneum itself is involved. The evaluation of a patient with ascites requires that the cause of the ascites to be established. In most cases ascites appears as part of a well-recognized illness such as cirrhosis, congestive heart failure, nephrosis or disseminated carcinomatosis, in these situations the physician should determine that the development of ascites is indeed a consequence of the basic underlying disease and not due to the presence of a separate or related disease process. This distinction is necessary even when the cause of ascites seems obvious.*
Materials and methods: *Patients admitted under various medical units from september2019-september2021, at Mamata Medical college and Hospital, Khammam. A Hospital based observational study was carried out on 100 patients were admitted with ascites are selected for the study age of the patients greater than 18 years are selected. All these patients assessed clinically by relevant history, general physical examination and specific investigations (complete hemogram, Random Blood Sugar, Blood Urea, Serum Creatinine, Serum Sodium, Serum Potassium, Urine Albumin, Urine Sugar, Deposits, X-ray Chest PA view, ECG, USG abdomen, Liver function tests, Ascitic Fluid Analysis (bio chemical analysis and cytology).*
Results: *The patients assessed clinically by relevant history, general physical examination and specific investigations. This study shows Cirrhosis with portal hypertension was the most common cause for ascites (78%) and the next common cause for ascites was heart failure (4 %) followed by renal diseases (11%) –*

chronic kidney disease(8%), nephrotic syndrome(3%) and other rare causes including, portal vein thrombosis, budd-chiari syndrome all together were 7 % only.

Conclusion: *In conclusion, Cirrhosis with portal hypertension was the most common cause for ascites and the next common cause for ascites was heart failure in our study. While renal diseases, chronic kidney disease, nephrotic syndrome are the main causes of ascites in o developing countries. The other major causes included portal vein thrombosis, budd-chiari syndrome, malignancy etc.so It is wise to consider and give priority to these diseases whenever one is evaluating a patient with ascites.*

Keywords: *CIRRHOSIS, ASCITES, MALIGNANCY, PORTAL VEIN THROMBOSIS*

I. INTRODUCTION

The term ascites is derived from the Greek word "ASKOS" (bladder, belly, bag) and denotes the presence of excessive fluid in the peritoneal cavity[1].

Many diseases are known to lead to the formation of free fluid within the peritoneal cavity. Basically the causes of ascites may be grouped into those conditions in which the pathological process does not directly affect the peritoneum and those in which the peritoneum itself is involved. The first group includes diseases associated with sinusoidal portal hypertension (cirrhosis, acute alcoholic hepatitis, fulminant or subacute viral or toxic hepatitis, congestive heart failure, constrictive pericarditis, IVC obstruction, Budd-Chiari syndrome, hepato-veno occlusive disease) hypoalbuminaemia (Nephrotic Syndrome, protein-losing enteropathy, and malnutrition), and a variety of disorders that may cause ascites through different mechanisms, such as myxoedema, ovarian diseases (carcinoma, benign tumours, ovarian hyper stimulation syndrome), chronic pancreatitis, biliary-tract leakage (secondary to liver trauma, biliary-tract surgery, or transhepatic cholangiography), diseases affecting the lymphatic system of the splanchnic area and chronic renal failure[2].

In the second group, ascites is formed as a consequence of primary peritoneal disease or as a result of peritoneal involvement in systemic process; tuberculosis, fungal (Candida albicans, Coccidioides immitis), parasitic and granulomatous peritonitis (sarcoidosis, Crohn's disease, peritoneal granulomatous reaction to talc, cotton, wood fibers, starch and barium), primary or metastatic peritoneal tumours, vasculitis (systemic lupus erythematosus, HenochSchonlein purpura), eosinophilic gastroenteritis, and Whipples disease are the most characteristic causes of ascites in this group[3].

The evaluation of a patient with ascites requires that the cause of the ascites to be established. In most cases ascites appears as part of a well-recognized illness such as cirrhosis, congestive heart failure, nephrosis or disseminated carcinomatosis, in these situations the physician should determine that the development of ascites is indeed a consequence of the basic underlying disease and not due to the presence of a separate or related disease process. This distinction is necessary even when the cause of ascites seems obvious[4].

Diagnostic paracentesis (50-100ml) should be part of the routine evaluation of the patient, with ascites. The fluid should be examined for its gross appearance, protein content, albumin level, cell count, and differential cell count, should be determined and gram's and acid fast stains and culture should be performed. Cytologic and cell block examination may disclose an otherwise unsuspected carcinoma. Serum ascites albumin gradient (SAAG) should be calculated to determine whether the fluid has features of a transudate or an exudate. The gradient correlates directly with portal pressure, a gradient >1.1 gm/dl, high gradient ascites is characteristic of uncomplicated cirrhotic ascites and differentiates ascites due to portal hypertension > 97% of the time. Other etiologies of high gradient ascites include alcoholic hepatitis, congestive heart failure, hepatic metastasis constrictive pericarditis and Budd chiari Syndrome. A gradient < 1.1 gm/dl (Low gradient) suggests that the ascites is not due to portal hypertension with > 97 % accuracy and mandates a search for other causes such as peritoneal carcinomatosis, tuberculous peritonitis, pancreatitis, serositis,pyogenic peritonitis, and nephrotic syndrome[5].

Blood stained fluid with > 2.5gm / dl protein is unusual in uncomplicated cirrhosis but is consistant with tuberculous peritonitis or neoplasm. Cloudy fluid with predominance of polymorphonuclear cells > 250/ micro liter and a positive Gram's stain are characteristic of bacterial peritonitis, which requires antibiotic therapy, if most cells are lymphocytes tuberculosis should be suspected. Chylous ascites refers to a turbid milky or creamy peritoneal fluid due to presence of thoracic or intestinal lymph. Such fluid shows sudan staining fat globules microscopically and an increased triglyceride content by chemical examination. Opaque milky fluid has a triglyceride concentration > 1000 mg/dl, but a triglyceride Concentration > 200mg is sufficient for diagnosis. A turbid fluid due to leukocytes, or tumor cells may be confused with chylous fluid (pseudochylous) and it is often helpful to carry out alkalinization and ether extraction of the specimen. Alkali tend to dissolve cellular proteins and thereby reduce turbidity, ether extraction leads to clearing if the turbidity of the fluid is due to lipid. Chylous ascites is often the result of lymphatic disruption, or obstruction from cirrhosis, tumor, trauma, tuberculosis, filariasis, or congenital abnormalities.It may also be seen in nephrotic Syndrome[6].

II. AIMS AND OBJECTIVES

Look for the various causes and their occurrence of ascites in adult hospitalized patients.
To study various etiological causes of ascites in adult patients who admitted in hospital.

III. MATERIALS AND METHODS

Study design **:** Hospital based observational study**.**
Study period **:** 24months-from september2019- September2021.
Place of study **:** Department of General Medicine, Mamata General Hospital, Khammam.
Sample size **:** Minimum 100 patients who were admitted with acute medical illness.
Inclusion criteria :
Patients admitted to the hospital with ascites are selected for the study.
Age of the patients greater than 18 years.

Exclusion criteria :
Age of the patients less than 18 years.
Patients not willing to give consent.

Tools :
The patients will be assessed clinically by relevant history, general physical examination and specific investigations.
The following investigations will be done in all the patients in this study.Blood complete hemogram, Random Blood Sugar, Blood Urea, Serum Creatinine, Serum Sodium, Serum Potassium, Urine Albumin, Urine Sugar, Deposits, X-ray Chest PA view, ECG, USG abdomen, Liver function tests, Ascitic Fluid Analysis (bio chemical analysis and cytology).
Other special investigations like echocardiogram, 24hrs urine protein, Serum amylase, Ascitic fluid amylase, Serum α feto - protein, Adenosine deaminase etc. were done in selective cases whenever needed as follows, Along with Ascites if the clinical picture was suggestive of heart disease, Echocardiogram was done. In addition to ascites if the clinical picture was suggestive of nephrotic syndrome, 24hrs urine protein and serum lipid profile done.If the clinical picture was suggestive of malignant ascites, ascetic fluid cytology for malignant cells and α feto-protein were looked for.

IV. RESULTS

The results of the study " **Etiology And Occurrence Of Ascites In 100 Adult Patients Admitted With A Acute Medical Illness**." conducted in the medical wards admitted in Mamata General & Super Speciality Hospital, Khammam has yielded an etiological profile of the entire study group as follows :
In this study of 100 cases of ascites, the etiology and its incidence is observed as, Cirrhosis with portal hypertension was the most common cause for Ascites observed more in male sex with 38(73.07%),less in females14(26.92%) most common risk factor among them is alcohol consumption and second most common individual cause was Heart failure 16(16%) followed by renal diseases (16%) – chronic kidney disease(11%), nephrotic syndrome(5%) .

Table 1

S.NO	ETIOLOGY	NO. OF CASES	% OF CASES
1	Cirrhosis with portal hypertension	52	78
2	Heart Failure	4	4
3	Chronic kidney disease	8	8
4	Nephrotic syndrome	3	3
5	Peritoneal carcinomatosis	0	0
6	Pancreatitis	5	5
7	Portal vein thrombosis	1	1
8	Budd- Chiari syndrome	1	1
Total number of cases		100	100

SEX DISTRIBUTION IN CIRRHOSIS OF LIVER OBSERVED AS BELOW

Table2

	Number of Cases	%
MALE	59	75.64
FEMALE	19	24.35
TOTAL	78	78

Male gender has been recognized as an important factor in the development of Cirrhosis with portal hypertension. In our study, of the 100 patients with acites, out of 52 cases of Cirrhosis with portal hypertension

38(73.07%) Were males ,out of 52 cases of Cirrhosis with portal hypertension 14(26.92%) were females probably reflects Cirrhosis with portal hypertension is developing faster in males as compared to females ,Males constituted the predominant number of our patients due to the socio-cultural reasons of liquor consumption .Cirrhosis of liver is common in males.

THE INCIDENCE OF ASCITES IN OTHER DISEASES

Table 3

Type	No of cases	%
Peritoneal carcinomatosis	1	1
Pancreatitis	10	10
Portal vein thrombosis	2	2
Budd- Chiari syndrome	0	0
TB Ascites	2	2
Hypothyroid	1	1
Total cases	16	16

In this study, of the 100 patients with acites, out of 100 cases The incidence Chronic pancreatitis was the cause for ascites in 10 cases of Ascites 10(10%), probably reflects Chronic pancreatitis is the next most common individual cause for ascites in this place of study and alcoholism was the cause for pancreatitis. Malignant ascites was suspected in 1% of the case in the present study, Portal vein thrombosis was the cause in 2 % of the case in the present study, TB Ascites was suspected in 2% of the case in the present study, Hypothyroid was suspected in 2% of the case in the present study.

V. DISCUSSION

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 of peritoneal tuberculosis.[6,7] 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.[8].

In India, cirrhosis of liver is the most common cause of ascites (55%) followed by tuberculosis (30%).[5] Males constituted the predominant number of our patients due to the socio-cultural reasons of liquor consumption. In our study, Cirrhosis with portal hypertension was the most common cause for Ascites observed more in male sex with 38(73.07%),less in females14(26.92%) most common risk factor among them is alcohol consumption.[1] .

In this study of 100 cases of ascites, the etiology and its incidence is observed as,

1. Cirrhosis with portal hypertension 78%
2. Heart Failure 4%
3. Chronic kidney disease 8 %
4. Nephrotic syndrome 3 %
5. Peritoneal calcinomatosis 0 %
6. Chronic pancreatitis 5 %
7. Portal vein thrombosis 1 %
8. Budd-Chiari syndrome 1 %

Cirrhosis with portal hypertension was the most common cause for Ascites and Heart failure was the followed by renal diseases (11%) – chronic kidney disease(8%), nephrotic syndrome(3%) second most common cause of ascites followed by Heart failure.

This coincides well with the following three studies :a)Bharanikumar R. Study on Etiology of Ascites (Doctoral dissertation, Thanjavur Medical College, Thanjavur the etiology and its incidence is observed as,[9], b) The study of Runyon BA, Montano AA, Akriviadis EA et al [10], the etiology and its incidence for ascites is as follows,[10]

In this study, of the 82 cases of cirrhosis with portal hypertension, 59 cases were male and 23 cases were female. Of the 59 male cases 44 cases were alcoholics – alcoholism is the commonest cause for cirrhosis

with portal HT in male. This coincides well with the study of the Tuyns A PequignotG: Greatest risk of ascitic cirrhosis in males in relation to alcohol consumption Int J Epidemiol 13:53, 1984 [11].

Chronic pancreatitis was the cause for ascites in one case of Ascites, and alcoholism was the cause for pancreatitis. In the study of Norton J Green berger, alcoholism was the commonest cause for pancreatitis [12].

In this study along with ascites, pleural effusion was present in 8 cases (8 %) of ascites.
On the 8 cases, 6 cases presented with Right sided effusion (75 %), 1 case presented with Left sided effusion (12.5 %), 1 case presented with Bilateral effusion (12.5 %). In the study of Leuallen EC, Carr DT, 4.8 % cases of cirrhosis with portal HT were having Pleural effusion and majority of cases 90 % were having Right sided Pleural effusion, 7 % were having Bilateral effusion 3 % having Left sided pleural effusion [13].

In cirrhosis with Portal hypertension, serum protein ranges between 2 – 6 grams. 75.6 % have 4 – 6 grams, 19.5 % have 2 – 4 grams, 5 % have > 6 grams, and 5 % cases have normal protein value. In the study of Runyon total ascitic protein concentration ranges between 0.5 grams and more than 6 grams and is greater than 3 grams in up to 30 % of patients with other uncomplicated ascites [6,7]. In the study of Runyon, the proportions of albumin and globulin in the total protein concentration are approximately 45 and 55 % respectively and the value ranges between 0.225 grams to 2.7 grams [6,7].

In cirrhosis with Portal hypertension, serum albumin values ranges between 1.1 grams to 3.3 grams. In the study of Runyon, the proportions of albumin and globulin in the total protein concentration are approximately 45 and 55 % respectively and the value ranges between 0.225 grams to 2.7 grams [6,7].

5 % of cases had normal protein and albumin and these cases presented with ascites, in those cases portal hypertension was present which was evident by oesophageal varices. So the cause of ascites in those cases was portal hypertension.

In this study in cirrhosis with Portal hypertension 76 cases (93.7 %) were having SAAG value more than 1.1, 6 cases (6.3 %) were having SAAG value less than 1.1 . This coincides with the study of Runyon BA, Montano AA, Akriviadis EA et al where SAAG value was more than 1.1 in 97 % cases of Cirrhotic ascites and less than 1.1 in Non cirrhotic ascites [6,7].

In this study, 8 cases of ascites were caused by heart failure. Of which 5 cases (62.5 %) were caused by CAHD and 3 cases (37.5 %) were caused by Rheumatic heart disease. In the study of Eugene Braunwald, CAHD followed by RHD are the common causes of heart failure[14].

In heart failure, 6 cases (75 %) had Ejection fraction < 60 % and 2 cases (25 %) had an ejection fraction > 60 % and both of these cases were caused by RHD. In the study of Rick a Nishimura, Raymond J Gibbons, James F, Glockner, A Jamil Tajik, Ejection fraction usually less than 60 % in Left ventricular failure [15].

VI. CONCLUSION

This study shows Cirrhosis with portal hypertension was the most common cause for ascites (78%) and the next common cause for ascites was heart failure (4 %) followed by renal diseases (11%) – chronic kidney disease(8%), nephrotic syndrome(3%) and other rare causes including, portal vein thrombosis, budd-chiari syndrome all together were 7 % only. In this study 72 % of ascites were found to be high gradient ascites and 6 % were low gradient ascites. In this study portal hypertension was present in 72% case of ascites due to cirrhosis, as evidenced by oesophageal varices in UGI scopy, where as hypoproteinaemia was present only in 95 % which shows portal hypertension is the major cause for ascites in Cirrhosis. In cirrhosis with portal hypertension alcoholic liver disease was the commonest cause (52%). Among alcoholics three case having the ascites was due to pancreatitis and not due to cirrhosis of liver. Among the renal causes for ascites which was 11%, the incidence of chronic kidney disease (8%) and nephrotic syndrome (3%).Among the renal causes chronic kidney disease is more common compared to incidence of nephritic syndrome. In this study malignant ascites was suspected in 2% of the cases but due to lack of affordability and patient support suspected cases referred tohigjer center .the incidence of ascities due to malignancy need future studies.

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