

## RATIONAL USE OF DIURETICS IN ASCITES

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### Abstract:

Ascites may be defined as an accumulation of fluid in the abdominal cavity. Ascites, a late manifestation of the liver, causes increased morbidity and mortality. Diuretics are the medications that work in the kidneys to promote the elimination of salt and water in urine. The aim of our study was to estimate the rational use of diuretics in ascitic patients. This was a retrospective study, which was carried out in different hospitals. For this purpose we selected three hospitals and monitored 50 patients of ascites. These patients were presented in clinical wards of Services hospital, Jinnah hospital and Sir Ganga Ram hospital Lahore between the period of 15 June 2009 to 25 June 2009. During treatment, spironolactone and furosemide was given and abdominal girth, urine and serum electrolytes were checked. Our result gave us a quantitative data of utilization of diuretics in cirrhotic ascites and there exist wide variability in prescribing practices in the hospitals. Spironolactone is drug of choice in management of ascites and additional potassium is unnecessary so the drugs should discontinue. Early recognition of complications allows therapeutic interventions that minimize further clinical deterioration in already chronically ill patients.

**Key words:** *Ascites, cirrhosis, diuretics, hepatorenal syndrome and spontaneous bacterial peritonitis.*

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### INTRODUCTION

The ascites is the most common of the major complications of cirrhosis. The development of ascites is an important landmark in the natural history of cirrhosis and has been proposed as an indication for liver transplantation [1].

When ascites develops in a patient with liver cirrhosis, his probability to survive the following two years amounts to 50%. A daily reduction of body weight of 0.5 to 0.75 kg should not be exceeded because prerenal failure may become a threat. Ascites is the most common complication of cirrhosis and is associated with a poor quality of life, increased risks of infections and renal failure, and a poor long-term outcomes. Other potential complications include spontaneous bacterial peritonitis, hepatocellular carcinoma, hepatic encephalopathy, hepatorenal syndrome and hepato-pulmonary syndrome [2]. In addition, alkalization of the urine and diuresis will reduce the noxious renal effects of substances like uric acid [3].

Current view is that spontaneous bacterial peritonitis (SBP) is the result of bacterial overgrowth in the small intestine followed by bacterial translocation across the intestinal wall. Because of impaired immune response in

cirrhotics and portosystemic shunts, the bacteria then spread into the systemic circulation and seed in ascites [4].

The medical treatment of ascites in cirrhosis is based on sodium restriction and the administration of diuretics. Spironolactone is the basic drug for the treatment of ascites [5]. Alkalinization of the urine and diuresis will reduce the noxious renal effects of substances like uric acid. A medical regimen for the management of ascites is suggested, one that employs salt and water restriction and a rational progressive program of diuretics to reverse the pathological sodium retention [6].

In the treatment of moderate ascites, spironolactone alone seems to be as safe and effective as spironolactone associated with furosemide. Since spironolactone alone requires less dose adjustment, it would be more suitable for treating ascites on an outpatient basis [7].

General management of patients with cirrhotic ascites includes severe restriction of dietary sodium intake and bed rest; diuretics are added if spontaneous diuresis does not occur after 3 to 4 days [8]. Most cirrhotic with ascites can be managed with a 'step-by-step' approach, including dietary salt restrictions, aldosterone

antagonists, and loop diuretics [9]. A daily reduction of body weight of 0.5 to 0.75 kg should not be exceeded because prerenal failure may become a threat [10].

The ascites should be managed by modest salt restriction and diuretic therapy with spironolactone or an equivalent in the first instance which was stated on the consensus conference of the International Ascites Club. Gross ascites should be treated with therapeutic paracentesis followed by colloid volume expansion and diuretic therapy. Liver transplantations should be considered for all patients and this should be considered for all ascitic patients [11]. In refractory ascites, patients do not respond to highest dose of diuretics (spironolactone 400mg/day and furosemide 160mg/day). It is postulated that extensive blocking of lymphatic drainage and peritoneal irritation secondary to widespread fat necrosis is sufficient to explain the marked degree of ascites [12].

The main aim of this retrospective study was to explore the role of diuretics in complications associated with ascites which can be prevented through salt restriction and by reducing fluid intake.

#### **MATERIALS AND METHODS:**

The study population consist of 50 patients (35 males, 10 females and 5 children and age group ranges from 0-80). The study was conducted in three hospitals named as Jinnah Hospital, Sir Ganga Ram hospital and services hospital. 15 patients selected from services hospital (10 males, 4 females and 1 child) 10 patients from Sir Ganga Ram hospital (7 males, 3 females and no child) and 30 patients from Jinnah hospital (18 males, 3 females and 4 children) and clinical monitoring was done on these patients. Patient profile was monitored daily before and after the administration of therapy. Age, sex, weight, blood pressure, pulse, BMI, BSA, abdominal girth, shifting dullness and fluid thrill were recorded. Family history, personal history, social history, socioeconomic factors and marital status were also taken into consideration. Drug strength, dose frequency, route of administration and interactions with

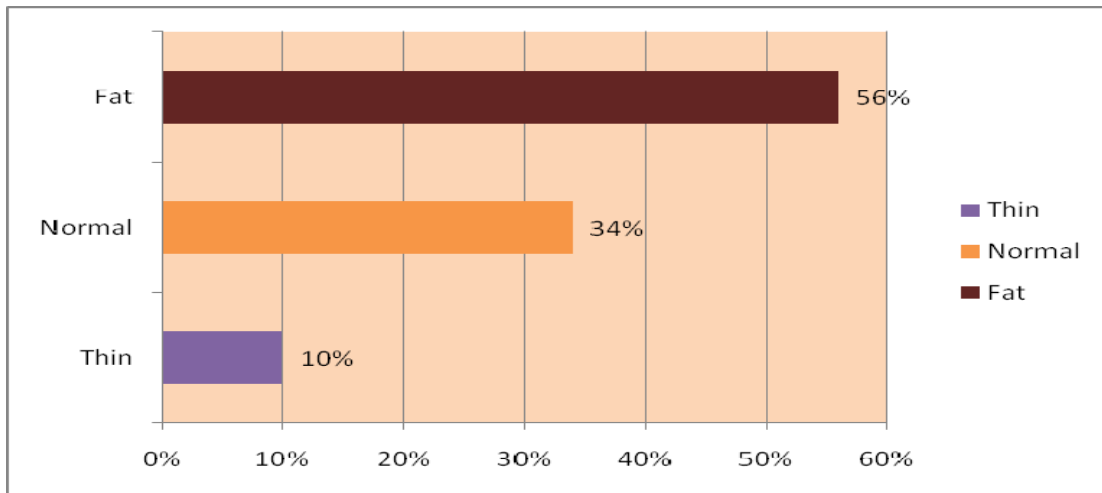
drug and food were also checked daily. The ascitic patients were restricted to Na intake and fluid intake and were given diuretics like spironolactone and furosemide. Tapping is the method which is used to detect the presence of fluid in abdominal cavity. Tapping of ascites is a simple technique that can be used for diagnostic or therapeutic purposes. For the cancer patient, it is primarily palliative but in cirrhosis it can serve as an important bridge in the wait for a liver transplant. In those with severe (tense) ascites, therapeutic paracentesis was done in addition to medical treatments listed above. As this may deplete serum albumin levels in the blood, albumin is generally administered intravenously in proportion to the amount of ascites removed. For this purpose surgical needles were used.

#### **RESULTS:**

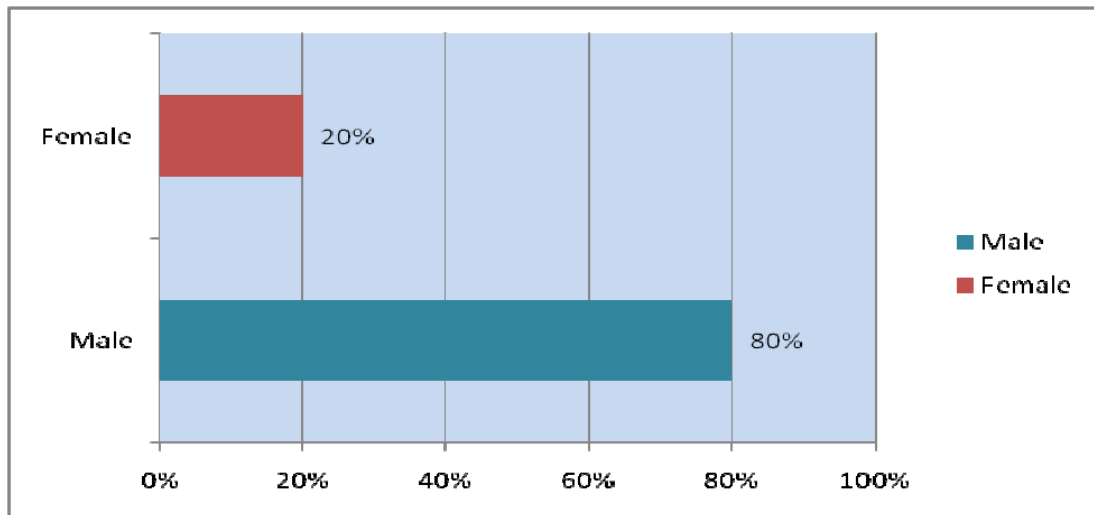
The results are expressed in percentages. Figure 1 shows obesity profile estimated by BMI. Most of the patients who suffer from ascites were fat. Figure 2 shows gender distribution of ascitic patients and shows that about 80% males have ascites. Figure 3 shows percentage of age distribution in total data population. Most of the occurrence of disease lies within age group 40-60.. Figure 4 shows the percentage of social history of total data population. Most of the patients were tobacco users i.e 84% and only 4% use alcohol. Figure 5 shows that patients with low socioeconomic status, about 60% were more prone to suffer from ascites. Figure 6 shows different grades of ascites. Most of people were observed with grade III ascites which is 40% with marked abdominal distension. Grade I and II ascites were also observed with 36% and 24% respectively.

#### **DISCUSSION:**

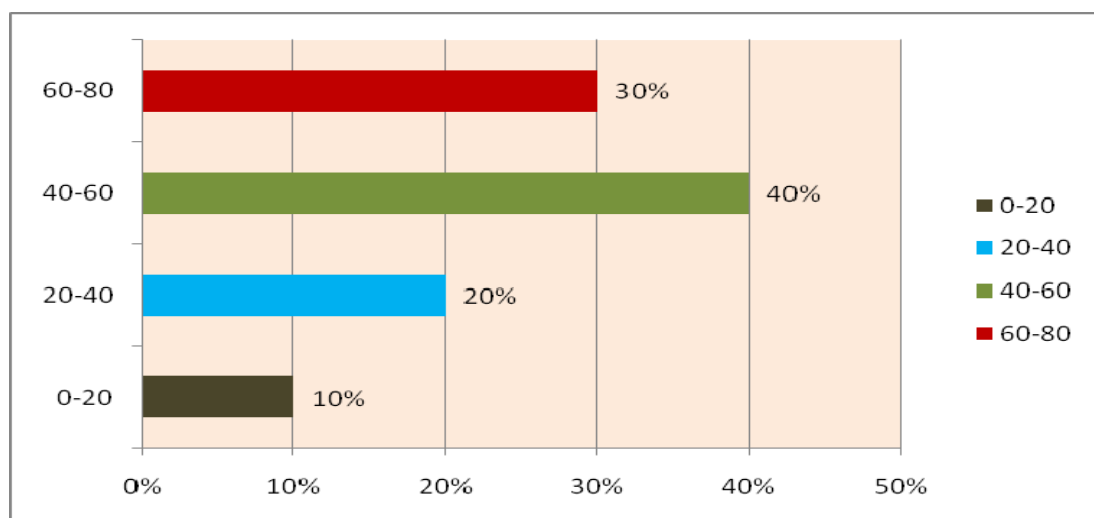
Ascites the accumulation of the excess fluid in the abdominal cavity and is first sign of decompensation in patients with chronic liver disease. Cirrhosis is underlying cause of ascites in atleast 80% of patients.



**Figure 1: Obesity profile estimated by BMI**



**Figure 2: Gender distribution of ascitic patient**



**Figure 3: Age distribution of ascitic patients**

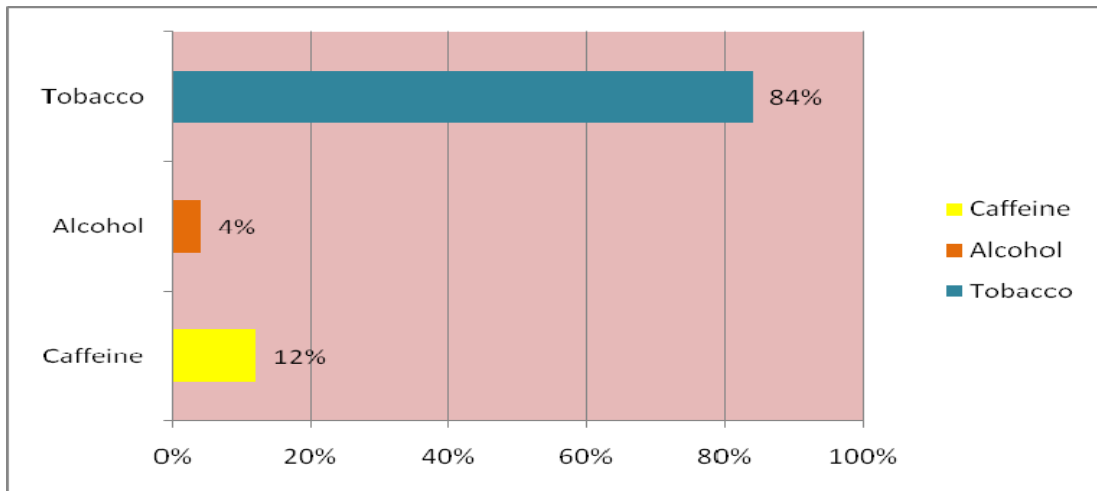


Figure 4: Substance misused

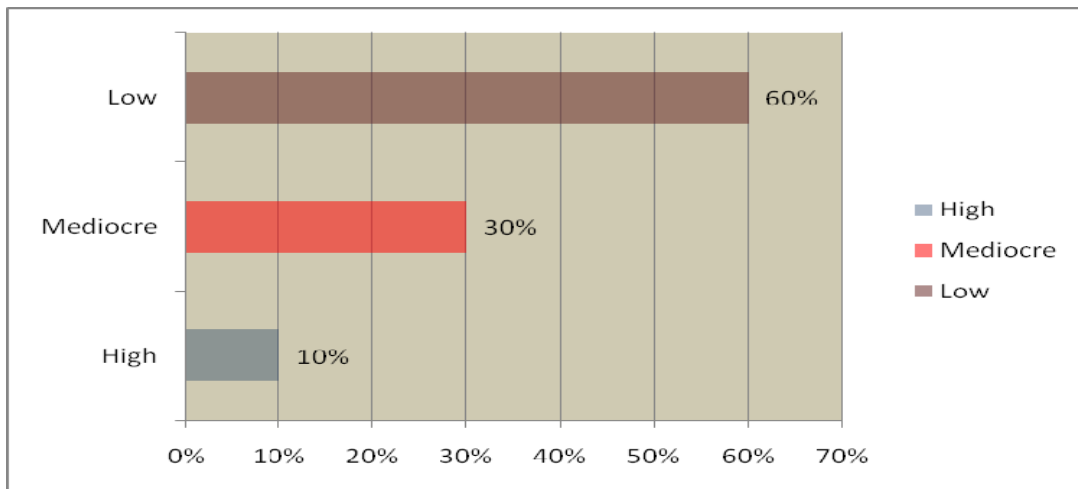


Figure 5: Socioeconomic status

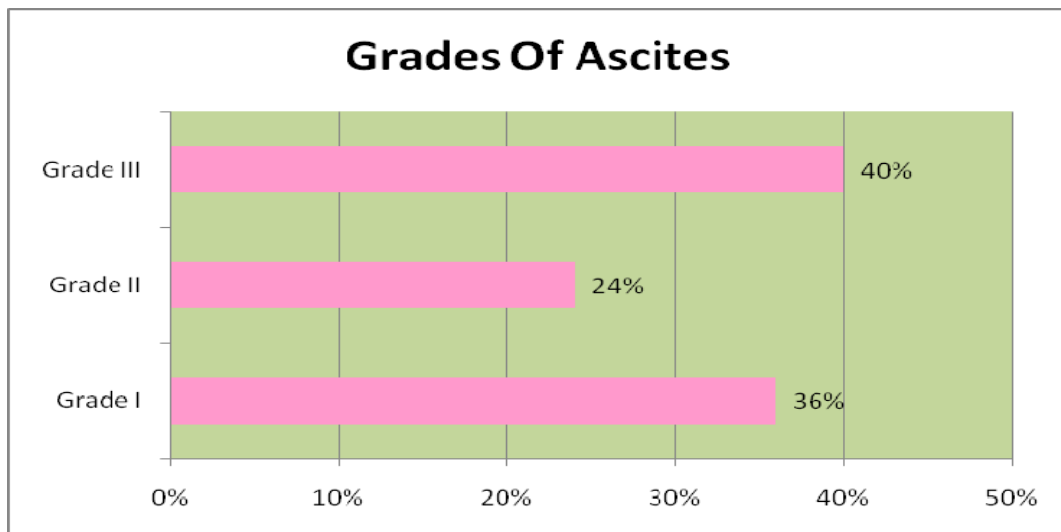


Figure 6: Grades of ascites

A therapeutic option for massive diuretic resistant ascites and severe oligouria of hepatic cirrhosis by giving combined ascitic fluid and furosemide infusion was studied. Large amount of ascitic fluid may cause distension, weight gain, anorexia and nausea. Physical examination may reveal shifting dullness and peripheral edema. Salt restriction to 2g /day is advised. Spironolactone is the first choice agent, may be combined with furosemide in selected patients. Decreased Na level was observed taking osmotic diuretic so, sodium intake was advised and therapy was stopped. K concentration increase by use of spironolactone causes arrhythmia, so, therapy was stopped and switched to combination therapy i.e spironolactone and furosemide. The therapy and its dosage was monitored by assessing BMI, abdominal girth etc. Ascites is associated with complications renal dysfunction, spontaneous bacterial peritonitis. Treatment is salt restriction and diuretics. Transjugular intrahepatic portosystemic shunt are most relevant innovations in treatment of ascites during past 2 decades. Early diagnosis, broad spectrum antibiotics and albumin infusion contribute to management of spontaneous bacterial peritonitis. Hypoalbuminemia, edema, ascites are often manifestation of cirrhosis of liver. Many patients to these conditions are resistant to diuretics. Combination of furosemide and albumin is used in these patients.

#### CONCLUSION:

The study substantiates the potential relationship of cirrhosis in development of ascites. It is clearly shown that sodium restriction, diuretic use, and albumin therapy are needed according to the condition of disease. The changes induced by diuretics and its beneficial effects to patients make it a drug of choice for the treatment of ascites and spironolactone was considered as a drug of choice.

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