شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم

HANAA ALY

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جامعة عين شمس

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قسم

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Impact of Different Modalities of Treatment of Hepatorenal Syndrome as Midodrine, Somatostatin analogue, Albumin infusion and Tapping of Ascites on Renal Artery Resistive Index by Doppler ultrasound

Thesis

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Kristeen Ezzat Zaki

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LIST OF ABBREVIATIONS

Full-term	ABB.
Acute Tubular Necrosis	ATN
End Diastolic Velocity	EDV
Glomerular Filtration Rate	GFR
Hepatorenal syndrome	HRS
International Ascites Club	IAC
Molecular Adsorbents Recirculation System	MARS
Neutrophil Gelatinase-Associated Lipocalin	NGAL
Peak Systolic Velocity	PSV
Resistive Index	RI
Transjugular Intrahepatic Portosystemic Shunt	TIPS
large-volume paracentesis	LVP

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Abstract

Background: Liver cirrhosis is a major cause of morbidity and mortality worldwide, mainly due to complications of portal hypertension. Ascites formation in patients with cirrhosis, portal hypertension, or both usually results from hyperdynamic circulatory dysfunction. **Aim of the Work:** to investigate the effect and prognostic value of treatment of hepatorenal syndrome in patients with liver cirrhosis and massive ascites by LVP, somatostatin analogue and midodrine intake and its effect on renal resistive index. **Patients and Methods:** This study was carried on 40 patients divided into 4 groups where 10 patients (G1) received midodrine therapy and albumin infusion, 10 patients (G2) had tapping of ascites with albumin infusion, 10 patients (G3) received octreotide therapy and albumin infusion and the last 10 patients (G4) received octreotide, midodrine and albumin infusion. All patients were subjected to careful history taking and thorough clinical examination. Before and after intervention, patients had laboratory investigation including complete blood picture, liver function tests, renal function test and ascitic fluid analysis in addition to renal artery Doppler imaging. **Results:** The study revealed considerable decline in RI in G1 (midodrine group), the change fell short of statistical significance. However, our study showed significant effect of midodrine administration on renal functions as expressed by serum creatinine, blood urea and creatinine clearance. In G3 (octreotide group), the effect of treatment on renal artery RI was minimal. The other group that perceived significant decline in renal artery resistive index was G4 (midodrine and octreotide group). **Conclusions:** LVP and midodrine combination administration resulted in significant decrease in creatinine clearance. Renal artery resistive index has significant correlation with creatinine clearance in studied group and can be used as non-invasive tool.

Key words: different modalities, hepatorenal syndrome, midodrine, somatostatin analogue, albumin infusion, tapping of ascites, renal artery resistive index, Doppler ultrasound

INTRODUCTION

Kidney dysfunction commonly develops in patients with established liver disease. In its most severe form this kidney dysfunction is termed the hepatorenal syndrome, which has been defined as unexplained kidney failure in a patient with liver disease who does not have clinical, laboratory or anatomic evidence of other known causes of kidney failure. The progressive kidney dysfunction that accompanies liver disease is generally considered to be functional in nature because consistent pathologic changes are absent, because the kidney failure can be reversed with timely liver transplantation, and because kidneys in patients with the hepatorenal syndrome can be successful transplanted into patients with normal livers ***(Williams & Wilkins et al 1988).***

Renal hemodynamic changes begin early in the course of liver disease related functional kidney failure; even before changes in serum creatinine concentration are detectable the hallmark change is intense intrarenal vasoconstriction. This vasoconstriction is associated with a reduced renal plasma flow and an elevated renal arterial vascular resistance that may precede clinically recognized kidney dysfunction by weeks or month. Although the precise cause of the renal vasoconstriction remains elusive and is likely multifactorial, a state of elevated renal vascular resistance is present in many nonazotemic patients with liver disease. These patients may be at greater risk for subsequent development of overt hepatorenal syndrome ***(Wadei et al., 2006).***

Ascites is the most common complication in patients with cirrhosis, and is associated with a poor quality of life and poor long-term outcome.

About half of the patients die within six months of first presentation, a third to half of those remaining, die over the next 2 years and the overall five year survival is about 10-20% ***(Runyon BA et al., 2009).***

Large volume paracentesis (LVP) is the most effective and safest treatment than just diuretic therapy for tense ascites. But diuretics should always be given after LVP in order to prevent reaccumulation of ascites, since diuretics would be required to reverse the pathophysiology of sodium retention ***(Salerno et al., 2007).***

Also, large volume paracentesis may cause enough alteration in hemodynamics to precipitate HRS and should be avoided in individuals at risk. The concomitant infusion of albumin can avert the circulatory dysfunction that occurs after large volume paracentesis and may prevent HRS. Conversely, in individuals with very tense ascites, it has been hypothesized that removal of ascetic fluid may improve renal function if it decreases the pressure on the renal veins ***(Salerno et al., 1987).***

Midodrine is an alpha-agonist and octreotide is an analogue of somatostatin, a hormone involved in regulation of blood vessel tone in the gastrointestinal tract. The medications are respectively systemic vasoconstrictors and inhibitors of splanchnic vasodilation, and were not found to be useful when used individually in treatment of hepatorenal syndrome ***(Salerno et al., 2007).***

However, one study of 13 patients with hepatorenal syndrome showed significant improvement in kidney function when the two were used together (with midodrine given orally, octreotide given subcutaneously and both dose according to blood pressure), with three

patients surviving to discharge ***(Angeli et al., 1999).*** Another nonrandomized, observational study of individuals with HRS treated with subcutaneous octreotide and oral midodrine showed that there was increased survival at 30 days ***(Esrailian et al., 2007).***

AIM OF WORK

The aim of this study is to investigate the effect and prognostic value of treatment of hepatorenal syndrome in patients with liver cirrhosis and massive ascites by (LVP), somatostatin analogue and midodrine intake and its effect on Renal Resistive index.

ASCITES IN HEPATIC CIRRHOSIS

Ascites is defined as the pathologic accumulation of fluid in the peritoneal cavity ***(Runyon, 2009)***. It is the most common complication of liver cirrhosis. The development of ascites is the final consequence of a series of anatomic, n pathophysiologic, and biochemical abnormalities occurring in patients with cirrhosis.

Ascites in hepatic cirrhosis develops because of a considerable increase of total body sodium and water and portal hypertension which localizes much of that sodium and water in the peritoneal cavity ***(Arroyo et al., 1988)***.

Sodium and Water retention:

Retention of sodium by the kidneys is the main reason for this increase though renal water retention does occur in more advanced disease. Renal excretion is the means whereby the body rids itself of excess sodium and normal urinary excretion varies widely in relation to sodium intake, Marked renal sodium retention however, is characteristic of hepatic cirrhosis and ascites; the total daily excretion of sodium in such patients is usually less than 10mmol/24 hours and in severe cases no sodium can be detected in the urine. Water retention occurs primarily as a consequence of sodium retention. Three general theories have been proposed to explain renal retention of sodium in hepatic cirrhosis ***(Ring-Larsen and Henriksen, 1986)***.

One suggests that portal hypertension causes a loss of fluid into the peritoneum and leads to depletion of the intravascular volume (under