

Clinical and Neurohumoral Response to Posture, Physical Exercise, and Ascites Treatment in Child-Pugh C Liver Cirrhosis: Randomized Prospective Trial

Vesna Degoricija, Vanja Zjačić-Rotkvić, Jasminka Marout, Siniša Šefer, Branko Troskot

Department of Medicine, Sisters of Mercy University Hospital, Zagreb, Croatia

Aim. To assess clinical and neurohumoral response to posture, physical exercise, and ascites treatment in patients with Child-Pugh C liver cirrhosis and tense ascites.

Method. Fifty patients with Child-Pugh C liver cirrhosis and tense ascites were randomly allocated into 5 groups. Thirty patients were treated with paracentesis of 6 L of ascites paralleled by plasma volume expansion with 200 mL of 20% low sodium albumin (10 patients), 600 mL fresh frozen plasma (10 patients), or 900 mL solution of synthetic gelatine (10 patients), ie, doses with comparable oncotic power, and bed rest for 24 h before and after the procedure. They were compared with 10 patients treated with paracentesis of 6 L of ascites without plasma volume expansion and no bed rest, and 10 patients treated with 40 mg of furosemide IV daily and no bed rest. Mean arterial pressure, heart rate, body weight loss, urine flow rate, creatinine clearance, plasma renin activity, plasma aldosterone concentration, and plasma atrial natriuretic peptide (ANP) were measured before the procedure and 6 hours, 2, 3, and 6 days after the procedure.

Results. Diuretic treatment and paracentesis of 6 L of ascites without plasma volume expansion and no bed rest 24 h before and after the procedure were associated with significant hypotension ($p < 0.01$) during 6 days of the trial, tachycardia ($p < 0.01$) on day 1 and 2 ($p = 0.012$), lower total body weight loss ($p = 0.007$), increase in plasma renin activity 6 hours after the beginning of the study ($p = 0.025$) and on day 6 ($p = 0.024$), increase in plasma aldosterone concentration on day 6 ($p = 0.030$), no significant change in plasma ANP levels, and decrease in creatinine clearance on day 6 ($p = 0.046$). Albumin was superior to the other plasma expanders. Comparison between groups treated with plasma volume expansion did not show significant differences in measured parameters at any time during the study. The differences were found in the amount of needed volume of each substitute, daily sodium balance on day 1 of the trial, increase in plasma aldosterone concentration in bed rest-paracentesis-polygelatine group on day 6, and the increase in plasma ANP on day 1 ($p = 0.077$), which was proportional to the amount of infused volume.

Conclusion. Therapeutic paracentesis of 6 L of ascites, bed rest 24 h before and after the procedure, and intravenous substitution of volume with albumin, fresh frozen plasma, and solution of synthetic gelatine were safe, rapid, and effective treatments, provided that intravascular volume was substituted simultaneously.

Key words: ascites; bed rest; diuretics; liver cirrhosis; paracentesis; plasma volume