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# Hepatorenal syndrome treatment with terlipressin and albumin

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Mark Hamilton,[Aff1]

Aff1 University College London Hospital, London

## Keywords

Albumin, cirrhosis, critical care, hepatorenal syndrome, terlipressin, vasopressin agonists

# Comments

This paper builds on previous work with vasopressin agonists in the treatment of hepatorenal syndrome. It is a small, uncontrolled pilot study and, as such, the results must be treated with caution. We will need to wait for larger randomised trials before incorporating the study findings into clinical practice; however, the results as they stand are impressive. It is unclear how much albumin contributes to the apparent therapeutic benefit. Plasma volume expansion with a synthetic colloid might be cheaper but may affect efficacy. Terlipressin is an expensive drug and the cost implications are significant, particularly if it's use increases the number of patients who survive to organ transplantation. This may exacerbate the continued shortage of donor organs.

# Introduction

Hepatorenal syndrome occurs in critically ill patients with established organ failure and represents a significant management problem. The optimum treatment is liver transplantation but patients usually die before an organ becomes available. Ornipressin, a nonselective agonist of V1 vasopressin receptors, reverses hepatorenal syndrome, possibly by reversing the extreme splanchnic arterial vasodilation that occurs in these patients, effectively increasing arterial blood volume. The problem with ornipressin is that it is associated with a high incidence of ischaemic complications (33% in one series). Terlipressin is also a nonselective agonist of V1 vasopressin receptors, but it has a longer half-life and a lower incidence of ischaemic complications. This study looked at the safety and efficacy of a terlipressin and albumin infusion and its effect on systemic haemodynamics and the activity of vasoactive systems.

# Methods

A small cohort of nine patients with cirrhosis and hepatorenal syndrome (as defined by the International Ascites Club criteria) were included in the study. Terlipressin and albumin were given until the reversal of hepatorenal syndrome (shown by a decrease in serum creatinine below 1.5 mg/dl) or for a maximum of 15 days if there was no response to the therapy. Terlipressin was initially given as a bolus of 0.5 mg/4h and increased stepwise every 3 days to 1 mg/4h and 2 mg/4h if a significant reduction in serum creatinine was not observed. Albumin (20%) was given at a dose of 1 g/kg/day during the first day and 20-40 g/day thereafter. If the central venous pressure rose to 18 cm $H_20$ the albumin infusion was stopped.

# Results

Seven of the nine patients showed a reversal of hepatorenal syndrome. There was also a marked improvement in mean arterial pressure (68 ± 2 to 80 ± 4 mmHg, $P < 0.05$) and suppression of vasoconstrictor activity (plasma renin activity and plasma norepinephrine decreased from 23 ± 12 ng/ml/h and 373 ± 98 pg/ml, respectively, $P$ %lt; 0.001). None of the patients developed signs of ischaemia. Treatment was discontinued in one patient on the fifth day of treatment because acute pancreatitis developed.

## References

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