

Selected summaries

Effect of intravenous albumin on renal impairment and mortality in patients with cirrhosis and spontaneous bacterial peritonitis

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In patients with cirrhosis and spontaneous bacterial peritonitis (SBP), renal function frequently becomes impaired, despite treatment of their infection with non-nephrotoxic antibiotics. This impairment is probably related to a reduction in effective arterial blood volume and is associated with a high mortality rate. A study was scheduled to determine whether plasma volume expansion with intravenous albumin prevents renal impairment and reduces mortality in these patients. 126 patients with cirrhosis and SBP randomly assigned to be treated with intravenous cefotaxime (63 patients) or cefotaxime and intravenous albumin (63 patients). Cefotaxime was given daily in doses that varied in according to the serum creatinine level, and albumin was given at a dose of 1.5g per kilogram of body weight at the time of diagnosis (first six hours), followed by 1g per kilogram on day 3. Renal impairment was defined as nonreversible deterioration of renal function during hospitalization. In patients without renal failure at enrollment, renal impairment diagnosed when the serum creatinine level increased by more than 50 percent of the pretreatment value (1.5mg per deciliter), and in patients with preexisting renal failure, by more than 50 percent from base line values. The infection resolved in 59 patients in the cefotaxime group (94 percent) and 62 in the cefotaxime-plus-albumin group (98 percent) ($p=0.36$). Renal impairment developed in 21 patients in the cefotaxime group (33 percent) and 6 in the cefotaxime-plus-albumin group (10 percent)

($p=0.002$); Eighteen patients (29 percent) in the cefotaxime group died in the hospital, as compared with 6 (10 percent) in the cefotaxime-plus-albumin group ($p=0.01$); at three months, the mortality rates were 41 percent (a total of 26 deaths) and 22 percent (a total of 14 deaths), respectively ($p=0.03$). Independent predictors of in-hospital mortality were the blood urea nitrogen level ($p<0.001$), serum bilirubin level ($p=0.01$), and prothrombin time (0.01) at base line and treatment assignment. Twenty-one (78 percent) of the 27 patients in whom renal impairment developed died during hospitalization, as compared with 3 (3 percent) of the 99 patients without renal impairment ($p<0.001$). At three months the mortality rates were 89 percent and 16 percent, respectively. Patients treated with cefotaxime had higher levels of plasma renin activity than those treated with cefotaxime and albumin, without any significant differences in arterial pressure; patients with renal impairment had the highest values.

In conclusion: In patients with cirrhosis and SBP, treatment with intravenous albumin in addition to an antibiotic reduces the incidence of renal impairment and death in comparison with treatment with an antibiotic alone.

COMMENTS

According to peripheral arterial vasodilation hypothesis, to explain the pathogenesis of ascitis, patients with cirrhosis and ascitis have a sequence of phenomena that include arteriolar vasodilation, hypotension, high cardiac output, decreased effective arterial blood volume, homeostatic activation, of the serum renin-angiotensin and sympathetic nervous systems, and increased circulating levels of arginin vasopressin and endothelin (Hepatology 1988; 8:1151-1157). Because these systems act as renal vasoconstrictors, renal perfusion and glomerular filtration are maintained in these patients by compensatory activation of renal vasodilators, especially prostaglandins (Semin Liver Dis 1997; 17:233-247). At the other hand, arterial vasodilation, impairment of circulatory system, and activation of neurohumoral vasoconstrictor systems are characteristics of the sepsis syndrome (N Engl J Med 1989; 321:280-287) and patients with ascitis and SBP have many features of sepsis syndrome (Hepatology 1998; 27:1227-1232). So, impairment

is probably resulted by the complex circulatory dysfunction of both cirrhosis and infection. But, vasoconstrictors act in the liver also, reducing the hepatic blood flow and aggravate portal hypertension and liver failure (J Hepatology 1985; 1:325-337). These effects account for the poor outcome of patients with SBP. The mortality of an episode of SBP is estimated about 30%, comparable with that of variceal hemorrhage (Gastroenterology 1999; 117:495-499). It is known also that large-volume paracenteses (that means removal of large quantity of albumin), results in increased portal pressure (Gastroenterology 1997; 113:579-586). These observations support the usefulness of plasma expansion by albumin (in combination with antibiotics), in the good outcome of patients with SBP and renal impairment (N Engl J Med 1999; 341: 403-409). Over the last 15 years dramatic improvement in survival of SBP has occurred. This is attributed to earlier diagnosis, to use of third-generation cephalosporins, and to synchronous supportive care (Hepatology 1998; 27:264-272). But, 30 to 40 percent of patients develop renal failure, which is the major cause of death (Hepatology 1994; 20:1495-1501). The use of intravenous albumin in the management of cirrhotic ascitis is not accepted by everyone. Some investigators support that large-volume paracenteses are safe if accompanied by intravenous administration of albumin at a dose 6-8g per liter of ascitic fluid removed, since it prevents the deterioration of renal function (Gastroenterology 1988; 94:493-502). Others support that, since up to a third of patients have never used diuretics, the renal impairment caused by paracenteses is of little clinical importance, the benefits in terms of survival is unclear, and the albumin has high cost, then the paracenteses with the administration of albumin is generally unnecessary or at least unnecessary in many patients (Arch Intern Med 1995; 155:373-379). In the study of Sort et al (N Engl J Med 1999; 341:401-409) there was clearly benefit from the administration of albumin plus an antibiotic in patients with cirrhosis and SBP. Advanced cirrhosis and sepsis are separate diseases, but they have similar mechanisms in causing hemodynamic disturbances. Probably these patients represent a subgroup, in whom the plasma expansion prevents the worsening of renal function and the development of hepatorenal syndrome (N Engl J Med 1999; 341:443-444). Of course, care must be taken in early identification of predisposing factors of SBP. Predisposing factors at first episode are the ascitic fluid low levels of total proteins, serum bilirubin and albumin concentrations, prothrombin time, and gastrointestinal hemorrhage (Gastroenterology 1993; 104:1133-1138). High risk subgroup are these cirrhotics with ascitic lev-

els of total proteins <1g/dL, bilirubin concentration >3.3mg/dL and platelet count <98000/ μ L (Gastroenterology 1999; 117:414-419). So, the close follow-up, the early identification and treatment of SBP has significant role in outcome of these patients, because after the developing of this complication these patients are candidates for liver transplantation, since their probability of survival the next year without antibiotic prophylaxis is <40% (Hepatology 1988; 8:27-31).

S. KALATHENOS

Retrograde transvenous obliteration of gastric varices

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Balloon-occluded retrograde transvenous obliteration is an effective new method of angiographic sclerotherapy for treating gastric varices. This minimally invasive interventional radiologic procedure, which was introduced by Kanagawa et al (Endosc Digest 1991; 8:1067-1071), leads to the occlusion of gastric varices through a gastrorenal shunt. Kawanaka et al (Am J Gastroenterol 1995; 90:508-510) were the first to report a successful reversion of hepatic encephalopathy using this angiographic technique.

In this study from Japan, the clinical efficacy, techniques and complications associated with balloon-occluded retrograde transvenous obliteration of gastric varices are presented and evaluated. Between December 1994 and November 1997, balloon-occluded retrograde transvenous obliteration of gastric varices was performed on 20 patients who had demonstrated gastric varices in danger of rupture, according to gastroscopic findings and, gastrorenal shunts, as shown by contrast medium-enhanced spiral computed tomography in the portal phase. Eleven patients had esophageal varices, sixteen had viral hepatitis, one primary biliary cirrhosis, three had alcoholic hepatitis, four complicating hepatocellular carcinoma, one had undergone resection of esophageal cancer and three patients had hepatic encephalopathy.

The procedure that was followed for the connection