Spontaneous Bacterial Peritonitis

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Spontaneous Bacterial Peritonitis is a complication of cirrhosis with ascites that is relatively common. It often presents with abdominal discomfort or with worsening hepatic encephalopathy or development of hepatorenal syndrome. Untreated it is usually fatal but with appropriate treatment it usually resolves. Diagnosis and treatment is relatively non-invasive and so it is generally appropriate in patients with end-stage liver disease, although of course, the decision to investigate and treat depends on patient and family wishes as well as the overall general picture of the patient's background health and acute deterioration.

Aetiology and pathophysiology

The pathogenesis of SBP is not completely understood but numerous factors are probably implicated including:[1)]

- Small intestinal bacterial overgrowth
- Problems with the local immune response
- Structural and functional changes in the normal mucosal barrier of the intestine

The most common organisms that cause SBP are gram negative rods, in particular Escherichia coli, Klebsiella and Enterococcus species. It is almost always only a single organism that is grown in culture; the presence of multiple organisms is not consistent with SBP and is more consistent with a perforated viscus.

Clinical features

Patients with SBP present in a variety of ways. Although abdominal discomfort is relatively common, it is also true that it is often absent. At times the only symptom is increasing confusion consistent with worsening hepatic encephalopathy. At other times there may be nausea or vomiting and sometimes the development of hepatorenal syndrome.

Investigations

Diagnostic ascitic tap

The standard diagnostic test is an ascitic tap looking for a raised ascitic neutrophil count. On the pathology request form ask for a cell count and differential. Diagnosis is confirmed by a neutrophil count of > 500 cells per cubic mm (> 0.5 x 10^9 cells per litre), although some units use a 250 cell (0.25 cell) cut-off value as this is more sensitive (but less specific than a 500 cell cut-off).

For patients who have a bloody tap or haemorrhagic ascites, a commonly accepted formula to correct for the blood is to subtract 1 neutrophil for every 250 red cells.

Ascitic fluid can also be cultured but the absence of organisms on microscopy or culture does not exclude SBP. Occasionally organisms are cultured when the ascitic neutrophil count was found to be normal and in these cases, where the patient is asymptomatic, it may be reasonable to observe and simply re-check the ascitic fluid for the neutrophil count again. If multiple organisms are grown on culture then suspect a perforated viscus rather than SBP.

Blood tests

Hepatorenal syndrome is a common complication of SBP and the creatinine should be checked.

Treatment

Third generation cephalosporins are widely used and effective, e.g.

> Cefotaxime 2g twice daily IV

Other third generation cephalosporins (e.g. ceftriaxone) or broad-spectrum penicillins (e.g. amoxycillin with clavulanate) are as effective.

In patients who appear well, oral antibiotics are a reasonable choice, e.g.

> Ciprofloxacin 750 mg twice daily orally OR Amoxycillin/clavulanate 1000mg/200mg three times a day orally

As the SBP resolves, the patient's symptoms and signs typically improve. In patients who do not clinically improve within 1-2 days, repeat testing of the ascitic fluid cell count and differential is important. If the neutrophil count has not significantly reduced (by at least 25%) then consider altering antibiotics and, if pain is a significant issue, consider investigating with imaging to look for a perforated viscus.

Albumin for hepatorenal syndrome

If the patient has a worsening creatinine suggestive of hepatorenal syndrome, then treatment with IV albumin is appropriate, e.g.

> 1.5 g of albumin/kg over 6-hours IV

Followed by

> 1 g of IV albumin/kg on day 3 of treatment

Some units advocate using IV albumin for all patients to reduce the development of hepatorenal syndrome but evidence for this is limited.

Prognosis

Acutely, with treatment, mortality rates are about 20%. Without treatment mortality rates are around 90%.

Following an episode of SBP, between 30-50% of patients will have died within a year and a further 25% will have died within the following year.

Prophylaxis

The use of antibiotics for primary prophylaxis is controversial, however prophylaxis is generally given for patients who have had an episode of SBP.

condition, complication, liver, textbook

[1)] Căruntu FA, Benea L. Spontaneous bacterial peritonitis: pathogenesis, diagnosis, treatment. J Gastrointestin Liver Dis. 2006 Mar;15(1):51-6.