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Cycling of antibiotics for the prophylaxis of recurrent spontaneous bacterial peritonitis in a cirrhotic patient

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TO THE EDITOR

More than 80% of cirrhotic patients who have been treated successfully for spontaneous bacterial peritonitis (SBP) experience a recurrence[1,2]. Long-term prophylaxis with single daily oral antibiotic has been shown to be cost effective in delaying a recurrence but only for a short time[3]. What has never been tested in this population is the cycling of antibiotics. We report the beneficial use of antibiotic cycling for 36 weeks in a 74-year-old woman with cryptogenic cirrhosis and recurrent SBP.

The patient was admitted because of abdominal pain. Physical examination revealed a malnourished woman with mild jaundice. Blood pressure was 100/60 mmHg, pulse 110 beats /min and temperature 37.4 °C. There was moderate ascites, splenomegaly and multiple signs of chronic liver disease. Plasma levels of urea, creatinine, and electrolytes were within normal limits. Blood platelets were 80 000 per mm³; prothrombin time by international normalized ratio (INR) was1.4; serum albumin, 3.0 g per deciliter; bilirubin, 2.5 mg per deciliter; alanine aminotransferase, 28 U per liter, ascitic protein, 1.0 gr per deciliter and ascitic white blood cells 1500 cell per mm³ with 75% neurophils. Ascitic culture was positive for Escherichia coli bacteria. Blood culture was negative. Abdominal ultrasonography revealed signs of portal hypertension. The patient was on prophylactic therapy with trimethoprim-sulphamethoxazole 160/800 mg daily during the last 3 mo. On admission the patient was treated with intravenous ceftriaxone 1 gr bid for 5 d with good response (ascitic neurophil decreased bellow 200 cell /mm^3). The patient was discharged with a recommendation to be on a prophylactic oral cefuroxime 500 mg qd for 6 wk followed by oral ofloxacin 200 mg qd for 6 wk, followed further by amoxicillin-clavulanic acid 875/125 mg qd for another 6 wk and finally trimethoprim-sulphamethoxazole 160/800 mg for an additional 6 wk (four cycles). The regimen was repeated. Gradually the patient's condition improved, the number of SBP episodes decreased and her ascitic neutrophil count returned to baseline levels (<100 cell/mm^3). Repeated ascitic cultures during follow up of 36 wk was negative for bacteria.

Several strategies have been suggested to prevent or reduce bacterial resistance to antimicrobials, including cycling[4]. This strategy has been studied recently in intensive care units and has resulted in fewer infections and in lower mortality[5]. The basic principle of cycling antibiotics is that a bacterium that becomes resistant (by plasmids, bacteriophages, transposons or integrons) to the first course of treatment would remain susceptible to the second regimen. If it is resistant to the second regimen, the third regimen should cope with the resistance. The selection of antibiotic cycling schedule in this case was arbitrary. Amoxicillin-clavulanic acid eliminates both aerobic and the anaerobic bacteria which could contribute to the development of multi-resistant organism. However, repeated ascites and blood culture were negative for bacteria, so the antibiotic resistance profile and the molecular evidence of bacterial translocation were not performed. Our report suggests the need for a randomized, prospective study of cycling of antibiotic prophylaxis in patients with recurrent SBP. The timing, number and order of cycles directed to prevent selection pressure of bacterial resistance remain to be determined.

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