Sponantaneous bacterial peritonitis (SBP) is a frequent and severe complication of cirrhosis [1-3]. The prognosis of SBP has been improved by the use of antibiotics with high peritoneal diffusion, low nephrotoxicity, and by the prophylactic use of antibiotics in high risk groups of patients [4]. Improved survival may also be explained by more rapid diagnosis and treatment thus preventing severe sepsis and septic shock, a condition well known for its frequently fatal outcome [5]. Diagnosis of SBP is based upon a polymorphonuclear neutrophil (PMN) count that is at least 250/µL with or without positive culture [1]. However in some instances, it is difficult to obtain an ascitic cell count within a few hours, and the clinician may decide to begin empiric antibiotic administration based on clinical or biological signs suggesting infection. Indeed, Runyon [6] suggested that the patient’s outcome may be hindered by unacceptable delays in diagnosis depending on the rapid availability of PMN count testing results. Surrogate markers for rapid diagnosis of SBP are thus urgently required.

The use of urinary reagent strips has been recently proposed for a rapid diagnosis of SBP. The urinary strips identify leukocytes by detecting their esterase activity via a colorimetric reaction [7, 8]. The use of Multistix® strips has been tested for the diagnosis of bacterial meningitis [9], pleural infection [10], synovial infection [11], and peritoneal infection in dialysis patients [12, 13]. It has been suggested that the use of a reagent strip could be promising for the diagnosis of SBP. The first study was performed in France by Vanbiervliet et al. [14]. In this study involving 72 consecutive cirrhotic patients, the authors tested the diagnostic performance of Multistix 8 SG®, the most frequently used urinary reagent strip in France. Nine patients had SBP and the sensitivity and specificity of this strip for the diagnosis of SBP were 100 and 100% respectively in this set-

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“Club Francophone pour l’Etude de l’Hypertension Portale” and the “Association Nationale des Hépato-Gastroentérologues des Hôpitaux Généraux de France” [24]. This large study included 2123 paracenteses performed in 1041 patients from 70 centers as well as 117 ascites specimen (in 91 patients) with criteria of SBP. The PMN count ranged from 250/µL to 34,000/µL. Sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV) of the Multistix® 8 SG® for the diagnosis of SBP, when considering a reagent strip positive with the grade 3 (125 leucocytes/mm², that is the closest of the threshold of 250 PMN/mm² defining SBP) were 45.3, 99.2, 77.9 and 96.9% respectively. However if grade 1 positivity is taken into account as in the study by Campillo et al. [21] the sensitivity of the strip was 62% making our results similar to those of Campillo et al. [21]. However, the sensitivity of the Multistix 8 SG® test was low in this multicenter prospective study as well as in the study of Campillo et al. [21] and Sapey et al. [18] and it is questionable whether grade 1 (15 leucocytes/mm²) should be considered a positive result.

However, the French multicenter study confirmed that the specificity of the Multistix 8 SG® reagent strip is very high in the diagnosis of spontaneous bacterial peritonitis.

What are the possible explanations for this poor sensitivity? First except for Castellote et al. [16] and Campillo et al. [21] all published studies were limited to a small number of patients with SBP (n < 20). According to the 95% confidence intervals, in a larger population of patients with SBP a high rate of false negative tests could be expected [18]. In the study performed by Butani et al. [15], two of the samples with a negative leucocyte esterase test had the two lowest absolute PMN values, 1,088 and 368 PMN/µL respectively. The authors suggested that the test was less sensitive in a weakly positive setting. In our study, as in the study by Campillo et al. [21], the large number of samples with low PMN values may explain the lowest sensitivity reported so far.

Second, other reagent strips may be more accurate. Castellote et al. [16] used Aution sticks manufactured in Italy and they observed 89% sensitivity. Sapey et al. [18] compared the Multistix 10 SG® and the Nephr test® and showed that Nephr-test® was more sensitive (88.2% vs 64.7%). The Combust-test®, which is a modified version of the Nephr test®, has also been recently compared with the Multistix® in two studies [17, 21]. The sensitivity of the tests were identical in the first study [18] and the Combust-test® was more sensitive than the Multistix® in the study by Campillo et al. [21] when a threshold of grade 2 on the colorimetric scale was used (63.0 vs 45.7%).

Third, the Multistix strip was designed for the detection of urinary tract infections where the number of leukocytes is significantly higher than in SBP. In SBP, infection is associated with a high morbidity and a high mortality rate. Therefore antibiotic treatment is a high priority. In the study by Campillo et al. [21] when a threshold of grade 2 on the colorimetric scale was used (63.0 vs 45.7%) the specificity of the Multistix 8 SG® reagent strip was 99.2% and 99.5%, compared with the Multistix® in two studies [17, 21]. The sensitivity of the Multistix 8 SG® reagent strip is very high in the diagnosis of spontaneous bacterial peritonitis.

Therefore antibiotic treatment is a high priority. Indeed, it has been shown that the prevalence of SBP is low in ambulatory asymptomatic patients where therapeutic paracenteses are performed for refractory ascites ranging from 0 to 2% [25-27]. The results of the published studies including that reported by Campillo et al. [21] published in this issue of the review do not support the systematic replacement of standard ascites fluid analyses by the use of reagent strips for the diagnosis of SBP.

REFERENCES


