***Bacillus cereus* as Agent of Peritonitis during Peritoneal Dialysis**

S.		Biasioli
S.		Chiaramonte
A.		Fabris
M.		Feriani
E.		Pisani
C.		Ronco
D.		Borin
A.		Brendolan
G.		La Greca

Department of Nephrology, St. Bortolo Hospital, Vicenza, Italy

S. Biasioli, MD, Department of Nephrology, St. Bortolo Hospital, F. Rodolfi Ave., I-36100 Vicenza (Italy)

Dear Sir,

Peritonitis is the most frequent complication of both acute and chronic peritoneal dialysis (PD) treatments. We report a case of peritonitis due to *Bacillus cereus*(BC), an organism which is unusual as an agent of peritonitis during PD treatments.

Case Report

The patient (B.B., male, 71 years old) had been undergoing home intermittent PD for 14 months. The dialytic schedule was: 40 liters $\times$ 3/week; 10 min dwelling time, dialysate flow of about 4 liters/h. The day after the dialytic session (July 7, 1982) the patient presented with widespread abdominal pain and fever (38 ° C). He was promptly hospitalized and, for fear of peritonitis, he was treated with continuous lavages, cefotaxime (100 mg/l) being added to the dialytic solutions. The ascitic fluid was cloudy and the inflowing dialysate caused such great pain that the patient could tolerate only a small filling of the peritoneal cavity (at most 1 liter/exchange). No peripheral leukocytosis was evident. On the 1st day, the outflowing dialysate cultures showed the presence of gram-positive and gram-negative strains (2,000 CFU/ml); the following days only gram-positive strains were found. On the basis of the bacterial sensitivity, from the 3rd day cefotaxime was replaced by gentamicin at a dose of 5 mg/l of dialysate. The clinical evolution was favorable: fever and abdominal pain disappeared on the 2nd day. The ascitic fluid contained – till the 10th day -10–15 leukocytes per high-power field (that is 400 x), while later the count fell to normal. The patient was discharged after 13 days of hospitalization, clinically recovered. However, the ascitic fluid cultures, effected routinely before each PD session, showed occasionally the presence of gram-positive strains (at low concentrations: 4–20 CFU/ml) till the 15th day after the patient's discharge. On August 4, 1982, the patient was again admitted to hospital for malfunction of the peritoneal catheter: no clinical symptom of peritonitis was present. After X-rays had confirmed that it was completely obstructed, the catheter was replaced. Cultures taken on catheter replacement grew persistent gram-positive organisms (4 CFU/ml).

Table I. Characteristics of *Bacillus cereus*

Rods

1.0–1.2 3.0–5.0

+ + -

+

+

35–45°C 10–20°C

elliptical central

acids

Width, µm Length, µm

Motility

N03 to NO2

Growth in anaerobic agar

Temperature for growth Maximum Minimum

Spore Shape Position

Products from glucose

Table II. Biochemical characteristics of *Bacillus cereus*

On August 7, 1982, the patient died suddenly of cardiac arrest. 2 months later, the Italian Superior Institute for Health (Rome) identified the gram-positive bacterium as *Bacillus cereus* (tables I, II). BC is the commonest aerobic sporebearer in soil [1]; some hemolytic strains can cause ulcerations and even death (in mice), if injected intraperitoneally or intravenously [2].

212

Biasioli/Chiaramonte/Fabris/Feriani/Pisani/Ronco/Borin/Brendolan/LaGreca

Conclusions

BC is an unusual organism causing peritonitis. Till now, only 2 other cases of BC peritonitis have been described: 1 by Mion[personal commun., Milan, December 1982], the other by Gokalet al. [3]. However, neither of them described bacteriological and biochemical findings of BC in man and clinical symptoms of peritonitis related to it. BC causes food poisoning in man but, since the bacillus was not sought in feces, we do not know if peritonitis was related to the presence of the same organism in stools. Whatever the source of the BC, once it arrived in the peritoneum, it found an ideal medium for its growth (aminoacids and glucose).

The clinical picture of BC peritonitis did not differ from that observed in most bacterial peritonitis cases. However, we underline that a low number of bacteria or spores remained in the peritoneal cavity after the patient's clinical recovery.

References

Smith, J.; Gordon, W.: Endospore forming rods and cocci; in Buchanan, Gibbons, Bergey's manual of determinative bacteriology (William & Wilkins, Baltimore 1975).

Wilson, G.S.; Miles, A.: Aerobic spore bearing bacilli; in Wilson, Miles, Topley and Wilson's principles of bacteriology, virology and immunity (Arnold, London 1975).