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Case Report

Peritoneal dialysis-related peritonitis caused by *Gemella morbillorum* in a patient with systemic lupus erythematosus receiving steroid therapy

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Gemella morbillorum, a Gram-positive coccus, is a natural inhabitant of the human oropharyngeal, upper respiratory and gastrointestinal tracts. Human infections caused by this organism are rare. We describe a case of peritoneal dialysis-related peritonitis due to *G. morbillorum* in a patient with systemic lupus erythematosus receiving steroid therapy. The patient responded well to antibiotics, without removal of the peritoneal catheter.

Key words: Gram-negative bacteria; Gram-positive bacteria; Peritoneal dialysis; Peritonitis; *Staphylococcaceae*

Introduction

Gemella morbillorum (formerly *Streptococcus morbillorum*) is a Gram-positive coccus and part of the normal flora of the human oropharynx, upper respiratory tract and gastrointestinal tract. Only a few cases of *Gemella* infection have been previously reported, and have been predominately infective endocarditis [1]. We describe a case of peritoneal dialysis-related peritonitis due to *G. morbillorum* in a patient with systemic lupus erythematosus receiving steroid therapy.

Case Report

A 29-year-old female receiving continuous ambulatory peritoneal dialysis for end-stage renal disease presented with abdominal pain for three days. She also noticed her dialysis bags had become cloudy. She received three exchanges of 1.5% and one exchange of 2.5% 2000 mL peritoneal dialysis solution (Dianeal; Baxter, Deerfield, IL, USA) each day. Her past medical history included systemic lupus erythematosus that was controlled with steroid therapy. Her continuous ambulatory peritoneal dialysis had been complicated by one episode of peritonitis with *Corynebacterium* species after commencing dialysis about one year earlier. Upon physical examination, she appeared clinically stable. Cardiovascular and respiratory examinations were normal. Mild diffuse abdominal tenderness without rebounding pain was noted.

Laboratory examinations demonstrated a raised peripheral white blood cell count of 12.1×10^9/L with a predominance of neutrophils (9.8×10^9/L). Microscopy of the dialysate fluid demonstrated white blood cell count of 1029/μL with predominance of neutrophils (85%). Gram stain of the effluent revealed no bacteria. Empirical intraperitoneal vancomycin (25 mg/L, all exchanges) and gentamicin (40 mg per day) were commenced for presumed peritonitis after a sample of peritoneal dialysis fluid had been taken. Five days later, culture of the fluid grew a Gram-positive coccus. The organism grew well on CDC blood agar plate (BBL Microbiology Systems, Cockeysville, MD, USA) in anaerobic conditions, but was scanty on trypticase soy agar supplemented with 5% sheep blood (BBL Microbiology Systems) in 5% carbon dioxide and in ambient air at 35°C for 2 days. The results of biochemical reactions generated by the API Rapid ID 32 Strep system (bioMérieux, Marcy l'Etoile, France) were in

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accordance with the identification of *G. morbillorum.* The organism was susceptible to penicillin, clindamycin, cefmetazole, flomoxef, and metronidazole. The dialysate fluid became clear and white blood cell count decreased to 213/μL after treatment for 5 days, upon which she commenced oral metronidazole (500 mg twice daily) treatment for a further 10 days. Repeated culture of dialysate fluid did not yield any microorganism. The Tenckhoff catheter was not replaced. The patient was followed at the nephrology clinic at weeks 1, 2 and 4 after discharge and had a full clinical recovery.

Discussion

G. morbillorum, formerly *Streptococcus morbillorum*, is a catalase-negative, facultatively anaerobic Gram-positive coccus that was first isolated from the blood of a subject with measles in 1917 by Tunnicliff [2]. The bacterium was transferred into the genus *Gemella* in 1988 based on DNA homology, physiological properties, and 16S RNA cataloguing [3]. It forms part of the commensal endogenous flora of the oropharynx, gastrointestinal tract, and genitourinary tract and is a relatively infrequent cause of infection in humans. *G. morbillorum* has been most commonly associated with infective endocarditis [4,5], but a few cases of meningitis, pericarditis, arthritis, osteomyelitis, empyema and lung abscesses, mediastinitis, and septic shock have also been reported [6-12].

To the best of our knowledge, there has been only one previous report of *G. morbillorum* peritonitis in a patient with continuous ambulatory peritoneal dialysis [13]. The patient did not have other underlying disease except end-stage renal disease. He received ampicillin-sulbactam and ciprofloxacin and had a favorable outcome. Our patient is the second reported case of *G. morbillorum* peritonitis complicating continuous ambulatory peritoneal dialysis. In spite of different comorbidity and antibiotic treatment between the two patients, both of them recovered well without removal of the dialysis catheter during the episode. *Gemella* can be incorrectly identified as viridians streptococci or misidentified because of easy decolorization on Gram staining. This may explain why so few cases are reported, and results in the prevalence being probably underestimated. The portal of entry of the organism in our patient was not obvious, because of the absence of any other infectious foci for propagation of the organism. The organism could gain access into the peritoneum by translocation from the gastrointestinal tract.

Gemella infections have been described in both immunocompetent and immunocompromised patients such as those with acquired immunodeficiency syndrome and bone marrow transplant recipients [14,15]. Our patient had no other underlying disease except uremia and systemic lupus erythematosus. These conditions might have made her more susceptible to this infection, although this is uncertain.

Our patient had a favorable outcome and full recovery with antibiotic treatment. This is consistent with the previous reported case, which may indicate that patients on continuous ambulatory peritoneal dialysis with peritonitis caused by *G. morbillorum* have a good outcome, even without removal of the peritoneal catheter if appropriate antibiotic therapy is initiated as early as possible [13]. Although *G. morbillorum* infection in our patient was susceptible to penicillin and metronidazole, some reports [16,17] suggest that resistance of this organism to penicillin and metronidazole may be relatively prevalent. Therefore, initial empirical therapy of the suspected case with peritoneal dialysis-related peritonitis should include the combination of vancomycin and an aminoglycoside [18]. In vitro susceptibility results may be a useful guide in the further management of these patients.

In conclusion, this case raises the possible role of *G. morbillorum* as a cause of dialysis-related peritonitis. Initial appropriate antibiotic treatment, even without removal of the peritoneal catheter, has lead to a favorable outcome.

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