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A rare case of *Actinomyces* Peritonitis in peritoneal dialysis

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ABSTRACT:

— ***Objective:*** Peritonitis is one of the most frequent complications in peritoneal dialysis (PD) patients. Most of them have a bacterial origin, especially gram-positive microorganisms. *Actinomyces* peritonitis is rare in PD patients. We report an exceptional peritoneal infection due to *Actinomyces odontolyticus* in patients with PD.

— ***Case report:*** A 51 years-old man who is on PD had acute abdominal pain, fever, dyspnea and cloudy drainage fluid. The diagnosis of infectious peritonitis was made based on the analysis of peritoneal fluid and computed tomography scan findings. The culture of the peritoneal fluid grew *Actinomyces odontolyticus*. The patient was treated with intraperitoneal vancomycin and oral ciprofloxacin for 6 weeks with a favorable outcome.

— ***Conclusions:*** Prompt and early antibiotherapy led to easy resolution of *Actinomyces* PD peritonitis without the need to remove the catheter.

— ***Keywords:*** Peritoneal dialysis, Catheter, Peritonitis, *Actinomyces*, Antibiotics.

INTRODUCTION

Peritonitis is one of the leading complications of peritoneal dialysis (PD) and the primary reason patients switch from PD to hemodialysis[1]. The etiology is typically bacterial infection, with a small fraction attributable to fungal infection. Approximately half of the causative organisms are gram-positive, most commonly *staphylococcus* and *streptococcus*. The rest are gram-negative, culture negative, or polymicrobial[2]. *Actinomyces* is known to cause abdominal and pelvic infections, but peritonitis is rare. Peritonitis in patients with PD caused by *Actinomyces* species is exceptional and has only been described in a few cases in the literature.

CASE REPORT

We report the case of a 51-year-old patient with penicillin allergy, a history of hypertension, dyslipidemia and chronic renal failure secondary to undetermined nephropathy who has been on PD for 2 years. He has no previous history of peritonitis. He presented with an acute abdominal pain, fever, dyspnea and cloudy drainage fluid. Physical examination revealed only abdominal distension. Biologically, he had an inflammatory syndrome. Peritoneal fluid analysis showed 970 white cells/mm^3 on direct examination. The computed tomography scan of the abdomen and pelvis showed free fluid intra-abdominally, around the liver, and in the pelvic area. There were no abscesses or perforations. The diagnosis of infectious peritonitis was made, and empiric antibiotic treatment based on intraperitoneal vancomycin (1 g every 5 days) and oral ciprofloxacin was started. The culture of the peritoneal fluid has grown a rare bacteria: *Actinomyces odontolyticus* sensitive to vancomycin, ciprofloxacin, amoxicillin and rifampicin and resistant to metronidazole. The same antibiotic therapy based on vancomycin and ciprofloxacin was maintained for 6 weeks. The outcome was favorable. There has been no need to remove the catheter as the infection was well controlled.

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DISCUSSION

Actinomyces is a filamentous gram-positive, anaerobic bacteria that is the commensal flora of the oral cavity and gastrointestinal tract. It achieves pathogenicity by breaching compromised mucosal surfaces, which might occur following surgery, trauma, perforated viscus, or intrauterine contraceptive device usage[2]. *Actinomyces* species are considered opportunistic pathogens since they take advantage of anaerobic environment produced while breaking the mucosal barrier, thus allowing the organism to penetrate the mucosa, starting up a granulomatous and suppurative inflammation[3]. Numerous species have been described, being *Actinomyces israelii* the most frequent in human infections. Similar to other actinomycosis, infections by *Actinomyces odontolyticus* usually arise from mucous membranes[4]. It has rarely been recovered from body sites other than the oral cavity, although transient bacteraemia after dental manipulation may occur[5]. Fifty percent of *Actinomyces* infections involve the cervicofacial region[2]. Abdominal localization is rare. It accounts for about 10%-20% of all cases. It is usually in the form of ileocecal involvement with a history of bowel surgery or ingestion of a foreign body. Peritoneal involvement is even more rare[6]. It is usually associated with diffusion from intrabdominal organs and is exceptionally reported in PD patients[7]. To our knowledge, this is the second case of Peritonitis in PD patient due to *Actinomyces odontolyticus*. It has been reported by Benevent et al[8], associated to Flavobacterium, causing peritonitis in PD patient. Globally, the clinical presentation of peritonitis in those patients is aspecific, with abdominal pain, cloudy fluid and inflammatory syndrome[9], as reported in our case. However, peritonitis should always be included in the differential diagnosis of the PD patient with abdominal pain, even if the effluent is clear, as a small percentage of patients present in this fashion[1]. Microbiologic identification of *Actinomycetes* is often precluded by the administration of prior antimicrobial therapy. Primary isolation usually requires 5-7 days but may take as long as 2-4 weeks[6]. Thus, before making a diagnosis of sterile peritonitis in PD patients, it is important to vary the conditions of culture. As the cause of these episodes, many workers underestimate the contribution of organisms considered to be rare such as *Actinomyces*[8]. It seems that there is no relation between the cause of the end-stage renal disease and the *Actinomyces* infection because it has been reported in patients with different renal disease aetiologies[10].

The management of actinomycosis is generally conservative with antibiotic treatment. Actinomycosis is treated with intravenous high-dose penicillin for 2-4 weeks followed by oral antibiotics for at least 2-6 months[11,12]. Other effective antibiotics include doxycycline, clindamycin, ceftriaxone, and imipenem[6]. There is not sufficient information in the literature about the optimal duration of the treatment. Some groups recommend treatment of between 2 and 6 weeks. It seems to be reasonable that treatment should continue until negative cultures are obtained and to perform a suitable follow-up to confirm its eradication[10]. The removal of the catheter is most frequent in peritonitis caused by gram-negative microorganisms and in co-infections with other agents. It is necessary to consider it when the evolution of the infection is more than 5 days to preserve the peritoneum and to reduce mortality[10].

CONCLUSIONS

Actinomyces peritonitis in PD patients is extremely rare. This is an exceptional case of peritonitis due to *Actinomyces odontolyticus* that benefited from an early diagnosis and an appropriate antibiotic treatment, allowing a favorable outcome without necessity of the peritoneal catheter removal.

Conflict of Interest:
The authors declare that they have no conflict of interest.

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