Peritoneal dialysis - associated peritonitis caused by Trichomonas vaginalis: A case report

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Case Report

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Background: Peritoneal dialysis-associated peritonitis remains one of the most significant complications in patients undergoing chronic peritoneal dialysis, contributing to technique failure, hospitalization, and increased morbidity and mortality. It is most commonly caused by gram-positive organisms such as *S. epidermidis*, as well as gram-negative bacteria. Fungal and atypical pathogens are less frequently encountered but are associated with worse clinical outcomes. Prompt diagnosis and treatment are essential to preserve peritoneal membrane function and prevent progression to severe infection or the need to discontinue peritoneal dialysis. Diagnosis is typically based on clinical presentation, peritoneal fluid analysis with elevated white cell count and neutrophil predominance, and microbiological identification of the pathogen. Empirical antimicrobial therapy must be initiated promptly and later adjusted based on culture and sensitivity results. While rare, protozoan infections such as Trichomonas vaginalis may be identified in peritoneal fluid, posing diagnostic and therapeutic challenges due to their atypical presentation and the lack of established management guidelines in international nephrology or infectious disease protocols. Awareness of such uncommon pathogens is critical, especially in cases with negative cultures or poor response to standard antibiotic regimens. Comprehensive microbiological evaluation, including microscopic examination, remains a key step in identifying rare etiologies. Further research and case documentation are needed to better understand the clinical significance, transmission mechanisms, and optimal management strategies for protozoal peritonitis in peritoneal dialysis patients.

Keywords: Peritoneal dyalisis, peritonitis, trichomona vaginalis.

Peritoneal dialysis-associated peritonitis is a common and serious complication in patients undergoing chronic peritoneal dialysis. The condition is typically caused by gram-positive or gram-negative bacteria, with fungal and atypical pathogens being less frequent. Trichomonas vaginalis, a protozoan parasite primarily associated with urogenital infections, is an extremely rare cause of peritonitis. To our knowledge, there are very few documented cases in the literature. We present a rare case of peritonitis associated with peritoneal dialysis catheter due to Trichomonas vaginalis, highlighting the diagnostic challenges and therapeutic approach in the absence of established guidelines.

Case report

A male patient in his seventh decade of life with a history of chronic kidney disease associated with long-standing hypertension and diabetes, who has been on peritoneal dialysis as renal replacement therapy for the past two years. He presents with abdominal pain, fever, oral intolerance, and changes in the color of the peritoneal dialysis effluent, as well as difficulty performing peritoneal dialysis exchanges.

Clinically, he shows signs suggestive of peritonitis associated with the peritoneal dialysis catheter. As part of the diagnostic workup, a peritoneal fluid cytochemical analysis is performed. The results reveal a white blood cell count greater than 250 cells with a predominance of polymorphonuclear cells, and notably, a large number of *Tricomonas vaginalis* are observed. Given the rarity of this finding, the test is repeated twice, yielding the same result each time. The samples were evaluated by three different experts, all reaching the same conclusion. A culture was performed, but no bacterial growth was detected.

Due to the absence of specific recommendations in international nephrology or infectious disease guidelines for the management of *Trichomonas vaginalis* - associated peritonitis, the peritoneal dialysis catheter is removed, temporary hemodialysis is initiated, and treatment with metronidazole is started, with a good clinical response observed after 10 days. Furthermore, considering the high prevalence of infections caused by both gram-negative and gram-positive bacteria, the patient also completed a 10-day course of antibiotic treatment with ceftazidime and vancomycin concurrently. The patient was discharged home on hemodialysis with outpatient

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Figure 1. Trichomonas vaginalis under 100x magnification, stained with Giemsa, showing its pear-shaped body, central nucleus, and multiple anterior flagella in bluish tones against a pale pink background.

follow-up. This extraordinary case of peritoneal dialysis catheter-associated peritonitis due to *Trichomonas vaginalis* is hereby reported.

Discussion

1. Epidemiology

The estimated prevalence of IP ranges from 3% to 36% of patients with psoriasis, depending on diagnostic criteria and whether genital involvement is included. In infants, it commonly presents as diaper psoriasis. Higher incidence is noted among obese individuals, and sudden onset in adults may suggest HIV infection.

Obesity, chronic friction, excessive sweating, tight clothing, persistent moisture, and microbial colonization (e.g., Candida spp., Staphylococcus aureus) are recognized triggers. Certain medications, such as infliximab, terbinafine, and etretinate, have also been implicated.

2. Diagnosis and histopathology

The diagnosis of inverse psoriasis is primarily clinical and based on characteristic lesion morphology and distribution. IP presents as well-demarcated, bright red to violaceous plaques located in intertriginous areas. Lesions are symmetrical, smooth, shiny and moist in appearance, with minimal or absent scaling, unlike the typical silvery scales of plaque psoriasis. Fissures, maceration, and superficial erosions are frequent due to friction, moisture, and microbial overgrowth.

Patients may report itching, stinging, soreness, or discomfort, especially in hot or humid conditions. On physical examination, signs such as “red glistening plaques" without peripheral scaling, well-defined margins, and occasional fissuring are diagnostic clues. Dermoscopy enhances diagnosis by revealing homogeneously distributed red dots or “bushy” capillaries, indicative of dilated and tortuous dermal capillaries.

Histopathology, when required, shows psoriasiform features: acanthosis, elongation of rete ridges, parakeratosis, thinning of the suprapapillary plate, and sometimes Munro microabscesses of Kogoj pustules.

3. Treatment and prognosis

Pharmacological options for IP treatment, are:

- First line (short-term): Low to mid potency topical corticosteroids (e.g., 0.1% betamethasone), which showed 86% improvement in modified PASI score in clinical trials.
- Second line (long-term): Calcineurin inhibitors such as tacrolimus and pimecrolimus are preferred for maintenance therapy. Tacrolimus achieved 65-71% response rates with minimal adverse effects.
- Other options: Vitamin D analogs (calcipotriol, calcitriol), with calcitriol being better tolerated and more effective in flexural psoriasis (67% vs 33% clearance).
- Resistant cases: Biologics such as adalimumab and ustekinumab have shown marked improvement in case reports, although supporting evidence is still limited.

Nonpharmacologic treatment includes hygiene with gentle cleansers, avoidance of friction, use of loose clothing, and application of emollients are essential. Therapies like 308nm excimer laser and botulinum toxic type A injections (50-100 U) have shown clinical benefit in resistant IP.

With early recognition and appropriate treatment, most cases can be controlled. However, relapses are common if therapy is withdrawn. Ongoing monitoring is recommended, especially in genital or perianal presentations due to their profound functional and emotional impact.

Conclusion

Trichomonas vaginalis is an extremely rare and often overlooked cause of peritoneal dialysis-associated peritonitis. Its identification requires a high index of suspicion and careful microscopic examination, especially in cases with negative cultures or atypical clinical progression. Due to the absence of established treatment guidelines, individualized management - including catheter removal and targeted antimicrobial therapy - may be necessary. Early recognition and appropriate intervention are essential to prevent complications and preserve patient outcomes.

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Conflicts of interests

The authors declare that there are no financial, personal, or institutional conflicts of interest that could have influenced the work reported in this manuscript.

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