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A rare case of peritonitis complicating acute appendicitis in a Patient on peritoneal dialysis

(Cas rare d'une péritonite compliquant une appendicite aiguë chez un patient en dialyse péritonéale.)

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Summary

Peritonitis is the most common complication in patients undergoing peritoneal dialysis (PD). However, its persistence despite appropriate antibiotic therapy should prompt consideration of alternative diagnoses, particularly acute appendicitis. We report the case of a 39-year-old PD patient who presented with culture-negative peritonitis unresponsive to treatment, ultimately resulting in a diagnosis of latero-cecal acute appendicitis. Diagnosis was confirmed by abdominal CT scan and exploratory laparoscopy, leading to surgical management with appendectomy and peritoneal lavage, while the catheter was preserved. Clinical improvement was achieved with targeted antibiotic therapy, and PD was resumed with low-volume exchanges without switching to hemodialysis. This case highlights the diagnostic challenge of acute appendicitis in PD patients, where clinical signs can be masked by frequent peritoneal lavage and intraperitoneal antibiotics. Prompt imaging and early surgical intervention are crucial to prevent complications.

Résumé

La péritonite est la complication la plus fréquente chez les patients en dialyse péritonéale (DP), mais sa persistance malgré un traitement antibiotique bien conduit doit faire évoquer d'autres diagnostics, notamment l'appendicite aiguë. Nous rapportons le cas d'un patient de 39 ans en DP ayant présenté une péritonite à culture négative, réfractaire au traitement, révélant une appendicite aiguë latéro-caecale. Le diagnostic a été confirmé par tomodensitométrie et laparoscopie exploratrice, permettant une prise en charge chirurgicale avec appendicectomie et lavage péritonéal, tout en conservant le cathéter. L'évolution a été favorable sous antibiothérapie adaptée, avec reprise de la DP à faible volume sans conversion à l'hémodialyse. Ce cas illustre la difficulté diagnostique que représente l'appendicite chez les patients en DP, où les signes cliniques peuvent être atténués par le lavage péritonéal et l'antibiothérapie IP. Une imagerie rapide et une intervention précoce sont essentielles pour prévenir les complications.

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Keywords: peritoneal dialysis, peritonitis, acute appendicitis, laparoscopy, antibiotic therapy.

Mots-clés : dialyse péritonéale, péritonite, appendicite aigüe, laparoscopie, antibiothrapie.

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INTRODUCTION

Abdominal pain is a concerning clinical sign in peritoneal dialysis (PD) and often raises suspicion for peritonitis as the primary diagnosis. Peritonitis, typically presenting with abdominal symptoms and cloudy dialysis effluent [1], is the most common infectious complication in PD patients. It generally responds well to antibiotic therapy without requiring surgery. However, other abdominal conditions can mimic or coexist with peritonitis and should be considered, especially when peritonitis is refractory to antibiotics. These include surgical peritonitis due to organ perforation, pancreatitis, cholecystitis, and acute appendicitis [2]. Abdominal computed tomography (CT) and laparoscopy are particularly useful in the diagnosis and the management of such cases [3].

In this context, we report a rare case of a PD patient who developed acute appendicitis associated with peritonitis.

CASE REPORT

We present the case of a 39-year-old male with end-stage renal disease of unknown origin who had been undergoing CAPD since 2021.
Four months after initiating dialysis, he developed his first episode of peritonitis due to methicillin-sensitive Staphylococcus aureus, which was successfully treated with intraperitoneal (IP) cefazolin for 21 days based on the results of antibiotic susceptibility testing. The treatment resulted in full recovery without recurrence.
Two years later, the patient presented with abdominal pain and cloudy dialysis effluent, without fibrin or drainage abnormalities.
Clinical examination revealed a blood pressure of 160/100 mmHg and tachycardia at 118 beats per minute. There were no signs of fluid overload, and the patient was afebrile.

Investigations

Laboratory findings revealed an inflammatory syndrome with neutrophilic leukocytosis (13.6 G/L) and a CRP level of 190 mg/L. Lipase was negative at 20 IU/L. Liver function tests and transaminases were within normal limits: AST 28 IU/L, ALT 22 IU/L, GGT 28 IU/L, and ALP 61 IU/L. The patient had inflammatory anemia with a hemoglobin level of 9.9 g/dL.
Electrolyte results were as follows: potassium 4.4 mmol/L, bicarbonate 27 mmol/L, sodium 134 mmol/L, chloride 95 mmol/L, glucose 1.08 g/L, blood urea 30.4 mmol/L, and serum creatinine 1,034 μmol/L.

Bacteriological analysis of the dialysis effluent confirmed a diagnosis of culture-negative peritonitis, with a leukocyte count, predominantly neutrophils, of 6,300/mm^3 in the dialysate. No organism was isolated from the exit site.

In accordance with our protocol, antibiotic therapy was initiated with intraperitoneal cefazolin and ceftazidime, along with a single dose of an aminoglycoside.

After 48 hours, the patient showed clinical and biological deterioration: ongoing abdominal pain,

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persistent cloudy effluent, and development of bowel obstruction symptoms (absence of stool and gas). An abdominal X-ray showed diffuse colonic gas without air-fluid levels. An abdominal CT scan revealed acute latero-cecal appendicitis, characterized by cecal fluid distension extending to the ascending colon (measuring 56 mm), with the PD catheter still in place in the pelvis (Figure 1).

A diagnosis of peritonitis associated with latero-cecal acute appendicitis in a PD patient was thus established.

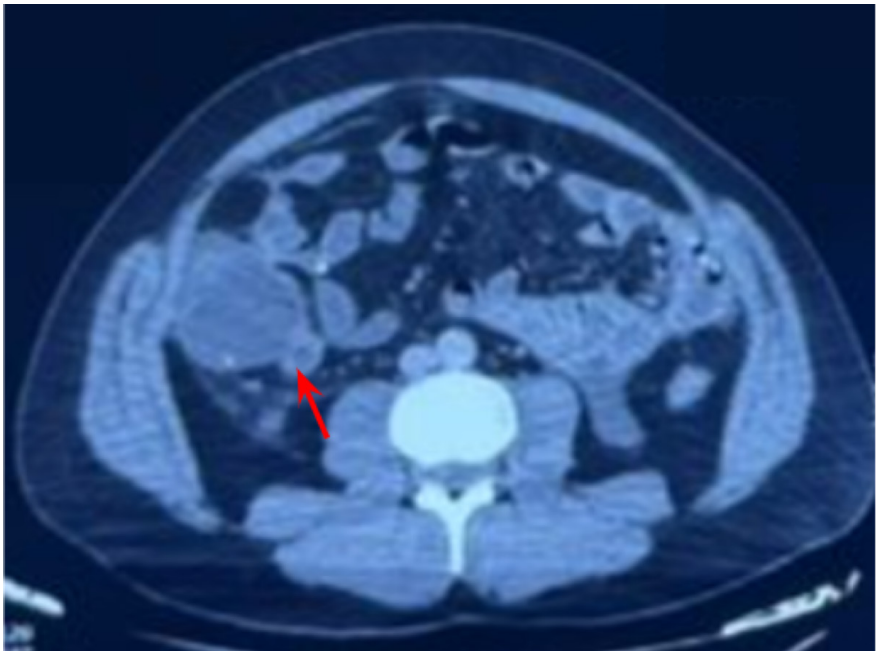

Figure 1: CT scan image confirming the diagnosis of acute appendicitis (red arrow)

Therapeutic Management

Given the diagnosis of acute appendicitis, an exploratory laparoscopy was performed and revealed a thickened appendix with adjacent inflammatory signs and several adhesions. The catheter was in place and remained patent. A peritoneal lavage, appendectomy, and adhesiolysis were performed, while the catheter was preserved (figure 2)

Figure 2: Surgical specimen from the appendectomy

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Histologically, the anatomopathological examination revealed an enlarged latero-cecal appendix, with an 11-mm-thick stercolith and adjacent fat infiltration. The cytobacteriological analysis revealed a positive culture for Escherichia coli and Group B Streptococcus. Given the lack of clinical improvement and persistent febrile syndrome, the antibiotic therapy was changed to ertapenem. Peritoneal dialysis was resumed with small volumes 72 hours later, without reliance on hemodialysis. Antibiotic therapy was maintained for a total duration of three weeks. The patient's condition showed clinical and biological improvement, and no recurrence of peritonitis was noted after one year of follow-up.

DISCUSSION

Peritonitis in PD patients is a common complication but is generally well treated with IP antibiotics. However, in this context, acute appendicitis represents a significant diagnostic challenge due to the attenuation of clinical symptoms specific to peritonitis. PD patients often present with atypical symptoms in cases of acute appendicitis due to the effect of peritoneal lavage: Frequent dialysate exchanges reduce bacterial load and delay abscess formation, thus masking typical signs such as localized pain or rebound tenderness [4,5]. Additionally, the use of IP antibiotics alters the inflammatory response and delays the diagnosis [5,6]. Persistent abdominal pain despite 48 hours of appropriate antibiotic treatment may indicate a secondary cause, such as appendicitis [1,7], while polymicrobial peritonitis involving enteric or anaerobic organisms serves as another warning sign [8]. In these cases, complementary exams play a crucial role: Abdominal CT, although often inconclusive, is essential for revealing the possibility of appendicitis or for ruling out other causes [7,9], while laparoscopy, recommended in cases of doubt, allows direct visualization and surgical management [10].

Appendicitis in PD patients can lead to peritoneal adhesions and catheter obstruction, as observed in our patient and supported by other cases in the literature where pelvic organs or inflamed appendices trap the catheter [9,11]. Delaying laparoscopy in these situations may increase morbidity and mortality [7,12]. Early surgical intervention, via laparoscopy or laparotomy, is essential to treat the appendicitis and reposition or replace the catheter if necessary. Resumption of PD at low volume is often possible after the procedure, although conversion to hemodialysis may sometimes be required [12,13].

Similarly, cases of acute appendicitis in PD patients presenting atypically are found in the literature. One case contains a description of catheter dysfunction caused by its insertion into adhesions in the lower right quadrant. The inflamed appendix, covered with fibrinopurulent exudate, was trapped against the catheter, which had to be repositioned in the pelvis after a successful appendectomy [2]. Another case involved a 23-year-old diabetic patient on PD who presented with Escherichia Coli BLSE peritonitis and who, 10 days after discontinuing the antibiotics, developed abdominal pain and turbid dialysate. The CT scan revealed perforated acute appendicitis with multiple abscesses and signs of intestinal obstruction, requiring appendectomy, adhesiolysis, and catheter removal. Despite these interventions, the patient died a few hours after surgery, highlighting the severity of these situations when not promptly managed [5].

CONCLUSION

In conclusion, acute appendicitis in patients on peritoneal dialysis poses a significant diagnostic

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challenge due to the symptom-masking effects of frequent dialysate exchanges and intraperitoneal antibiotics. Heightened vigilance is essential in the presence of persistent abdominal pain or catheter dysfunction, even in the absence of classical signs of peritonitis.
Radiological investigations, especially CT scanning, and early surgical intervention, via laparoscopy or laparotomy, perform an essential role in confirming the diagnosis and minimizing complications. These cases highlight the importance of rapid, multidisciplinary management to improve prognosis, although mortality remains high in complicated forms.

Authors' Contributions

Authors' contribution : HN contributed to the conceptualization and methodology of the study, as well as drafting the original manuscript. FH was responsible for data collection and analysis. EN conducted the literature review and revised the manuscript. ON designed the project and assisted in its implementation, while BL conducted the final review and gave approval for publication

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Conflicts of Interest
No conflict of interest to declare.

Ethical Considerations

Informed oral consent was obtained from the patient after explaining the objectives and methods of publication.

REFERENCES

1. Li PKT, Chow KM, Cho Y, Fan S, Figueiredo AE, Harris T, et al. ISPD peritonitis guideline recommendations: 2022 update on prevention and treatment. Perit Dial Int J Int Soc Perit Dial. 2022 Mar;42(2):110–53.

2. Boumaiz F, EL Maakoul S, Hmaidouch N, Ouzeddoun N, Benamar L. Abdominal Pain in Peritoneal Dialysis: Peritonitis or Pancreatitis? A Report of Three Cases. Bull Dial Domic [Internet]. 2024;7(4):199-206. Available from: https://doi.org/10.25796/bdd.v7i4.84643

3. Mari G, Scanziani R, Auricchio S, Crippa J, Maggioni D. Laparoscopic Surgery in Patients on Peritoneal Dialysis: A Review of the Literature. Surg Innov. 2017 Aug;24(4):397–401.

4. Khanna A. Serratia Marcescens - A Rare Opportunis - tic Nosocomial Pathogen and Measures to Limit its Spread in Hospitalized Patients. J Clin Diagn Res [Internet]. 2013 [cited 2023 Jan 29]; Available from: https://doi.org/10.7860/jcdr/2013/5010.2737

5. Khaldy M, Arafat H, Samoudi A, Shawamreh B, Khaldy M, Arafat H, et al. Appendicitis Misdiagnosed as Peritoneal Dialysis-Related Peritonitis: A Case Report. Cureus [Internet]. 2023 Aug 17 [cited 2024 Nov 28];15. Available from: http://dx.doi.org/10.7759/cureus.43616

6. Appendicitis in a CAPD Patient: A Diagnostic Challenge - Chih-Yu Yang, Chiao-Lin Chuang, Shu-Huei Shen, Tzen-Wen Chen, Wu-Chang Yang, Jinn-Yang Chen, 2007 [Internet]. [cited 2024 Nov 28]. Available from: https://doi.org/10.1177/089686080702700522

7. Nardelli L, Scalamogna A, Ponzano F, Sikharulidze A, Tripodi F, Vettoretti S, et al. Peritoneal dialysis related peritonitis: insights from a long-term analysis of an Italian center. BMC Nephrol. 2024 May 11;25(1):163.

8. Microbiology and outcomes of polymicrobial peritonitis associated with peritoneal dialysis: a register-based cohort study from the French Language Peritoneal Dialysis Registry | Nephrology Dialysis Transplantation | Oxford Academic [Internet]. [cited 2024 Dec 5]. Available from: https://doi.org/10.1093/ndt/gfac267

9. Yilmaz E. Computed tomography findings of peritoneal dialysis related complications. Eurasian J Med Investig [Internet]. 2019 [cited 2024 Dec 5]; Available from: https://dx.doi.org/10.14744/ejmi.2019.12015

10. Sangrasi AK, Talpu KAH, Kella N, Laghari AA, Rehman Abbasi M, Naeem Qureshi J. Role of laparoscopy in peritonitis. Pak J Med Sci. 2013;29(4):1028–32.

11. Ballinger AE, Palmer SC, Wiggins KJ, Craig JC, Johnson DW, Cross NB, et al. Treatment for peritoneal dialysis-associated peritonitis. Cochrane Database Syst Rev. 2014 Apr 26;2014(4):CD005284.

12. Zhang L, Cao T, Li Z, Wen Q, Lin J, Zhang X, et al. Clinical Outcomes of Peritoneal Dialysis Patients Transferred from Hemodialysis: A Matched Case-Control Study. Perit Dial Int J Int Soc Perit Dial. 2013;33(3):259–66. https://doi.org/10.3747/pdi.2011.00125

13. Khan MI, Adeel FA, Luni FK, Khan AR, Malhotra D, Duggan J. Secondary Peritonitis in Peritoneal Dialysis: A Case Report and Review of Literature. J Med Cases. 2018;9(9):289–92.

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