CASE REPORT

Abdominal Pseudocyst in the Vicinity of Calcified Renal Allograft in a Patient with Peritoneal Dialysis - Case Report

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Abstract

Abdominal pseudocysts are rarely reported in peritoneal dialysis and usually arise secondary to repeated dialysis-related peritonitis. We present the case of a patient with end-stage renal disease treated for 9 years by continuous ambulatory peritoneal dialysis that developed an abdominal pseudocyst in the vicinity of the non-functional and calcified renal graft. Because the adequacy of peritoneal dialysis was optimal, surgical removal of the invaginated peritoneum and closure of the breach allowed the patient to continue peritoneal dialysis treatment.

Keywords: Peritoneal dialysis; complications; abdominal pseudocyst; calcified renal allograft.

Rezumat

Pseudochisturile abdominale sunt rar raportate la pacienții dializați peritoneal și, de obicei, în context de peritonite recurente. Prezentăm cazul unei paciente aflate în program de dializă peritoneală de peste 9 ani care a dezvoltat un pseudochist abdominal în proximitatea grefei renale nefuncționale și calcificate. Deoarece pacienta întrunea criteriile de adecvanță a dializei, excizia porțiunii invaginate de peritoneu și închiderea breșei au permis continuarea tratamentului prin dializă peritoneală.

Cuvinte cheie: dializă peritoneală; complicații; pseudochist abdominal; greafă renală calcificată.

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INTRODUCTION

The most encountered complications of peritoneal dialysis include peritonitis, peritoneal hernias, leakage, catheter displacement and membrane failure. Abdominal pseudocysts are rarely reported and usually arise secondary to repeated dialysis-related peritonitis. We describe a case with an abdominal pseudocyst that occurred secondary to abdominal compression of left-in-place calcified kidney graft. Surgical removal of the invaginated peritoneum and closure of the breach permitted the patient to continue peritoneal dialysis treatment.

CASE PRESENTATION

A 64 years old anuric female, 148 cm height and 46 kg weight, undergoing CAPD (Continuous Ambulatory Peritoneal Dialysis) for 9 years, 2 liters-bag dextrose 1.36 g/L x 4 times daily, is admitted for nausea, diffuse abdominal pain, and turbid dialysis effluent of 12 hours duration.

The patient has a history of acute rejection of kidney transplant 4 years ago; the graft, being positioned, during transplantation, in the extra peritoneal space of the right iliac fossa, was left in its place after rejection and immunosuppressive therapy was stopped. Before and after transplantation, the patient underwent CAPD.

2 years before the actual admittance, the patient presented with an episode of dialysis-related peritonitis with *Staphylococcus aureus* treated according to current guidelines [1]. During hospitalization, the graft was palpable in the right iliac fossa as a painless, firm and immobile mass; a CT scan was performed and it revealed extensive calcification of the renal allograft.

The patient had no other peritonitis until the actual presentation (e.g. peritonitis rate of 0.22 episodes/year). She has a low-average transporter type of peritoneum and, last checked 1 month prior to actual hospitalization, she had a Kt/V urea of 1.88 and a creatinine clearance of 63 L/week/1.73 m². Also, the patient has insufficient resources for a native or prosthetic fistula as Doppler ultrasound revealed in several examinations.

At the admittance, physical examination showed a tender palpable abdomen with an abdominal mass at the site of the kidney graft having a diameter of approximately 10 cm and raising the suspicion of graft pyonephrosis. Abnormal analyses of blood and dialysis effluent at the presentation are depicted in Table 1; no other pathologic findings were revealed (i.e. electrolyte

Table 1. Abnormal finding at admittance in the hospital

Blood	Dialysis effluent
WBC 15,600/ μ L; polymorphonuclear leukocytes 85%	WBC 167/ μ L; polymorphonuclear leukocytes 76%
Serum urea 118 mg/dL	Culture: <i>Staphylococcus aureus</i>
Serum creatinine 7.9 mg/dL	Sensitivity: ciprofloxacin, vancomycin, trimetoprim-sulphamethoxazol, oxacillin
CRP 23 mg/dL	
ESR 87 mm/ 1h	

or acid-base disorders, glucose, anaemia, serum albumin etc.).

Abdominal ultrasound revealed small native kidneys, calcified renal allograft and a septated cystic mass in the subcutaneous tissue anterior to the graft confirmed on the CT scan (Figure 1).

Dialysis effluent cultures were positive for *Staphylococcus aureus*. After performing 3 weeks of intraperitoneal antibiotic (vancomycin 1g at 5 days) and ensuring sterility of dialysis effluent, surgery was performed. Intraoperative examination revealed, at the site of the old incision line for transplantation, an invagination of peritoneum anterior to the graft, in the subcutaneous aponeurosis, which created a pseudo-cavity supplied with dialysis fluid and compressing the graft (Figure 2). The breach was suppressed and the patient underwent haemodialysis for 4 weeks on a femoral temporary catheter, switching thereafter to CAPD.

3 months after surgery, she underwent a check of dialysis adequacy and all parameters were preserved according to guidelines¹.

DISCUSSIONS

Most of abdominal pseudocysts are reported in non-nephrologic patients, usually after insertion of ventriculoperitoneal shunt for hydrocephalus²; incidence of this complication is between 1-4.5%^{2,3}. Literature data reveals few cases of abdominal pseudocysts reported in CAPD patients. Most cases are diagnosed during a peritonitis episode and there is described a direct relationship between membrane structural changes secondary to recurrent peritonitis and pseudocysts formation⁴⁻⁷; all patients were switched on hemodialysis, after surgical removal of the pseudocyst. Other reports describe abdominal pseudocyst incorporating the inner tip of the Tenckhoff catheter^{4,8} irrespective of presence or absence of peritonitis. A single case cumulating both ventriculo-peritoneal shunt and peritoneal dialysis is

Figure 1. Septated cystic mass located anterior to the kidney graft (CT scan).

Figure 2. Peritoneal invagination in the subcutaneous tissue (intra-operative view).

reported⁹, the patient experienced recurrent peritonitis and needed further treatment on hemodialysis.

We presented a CAPD patient who maintained an adequate dialysis clearance and ultrafiltration for 9 years, despite the absence of residual renal function. Moreover, during this period she had a kidney trans-

plant surgery and also experienced an acute rejection of graft and immunosuppressive therapy. She has a remarkable compliance to diet and treatment. She has also a high adherence to recommendations of the nursing staff regarding hygiene during exchanges, which explains low rate of peritonitis comparing to other reports¹⁰⁻¹² or guidelines¹. Failure of technique survival in CAPD and need for switching on hemodialysis is recorded in most patients after a median period of 2-3 years¹³⁻¹⁶ and this period may be shortened by repeated peritonitis^{14,15}. Nevertheless, regardless of peritonitis, in patients with long-term PD, progressive vascular and mesothelial changes in the peritoneal membrane have been described¹⁷, with subsequent fibrosis and membrane failure. These changes may increase the risk for pseudocyst development along with increased intraperitoneal pressure due to dialysis fluid, although the exact mechanism of pseudocysts formation is yet to be discovered even in non-peritoneal dialysis patients. In our patient, we suppose that the presence of calcified renal allograft was the main factor favoring development of the pseudocyst in the context of structural changes of long-duration PD. Also, given the fact that she is a small sized person, the intra-abdominal pressure of the 2 liters of dialysis fluid can be significant compared to larger patients. Although there were no macroscopic pathological findings of the peritoneal

membrane on intraoperative inspection, microscopic abnormalities may be present and this patient needs a close monitoring of adequacy of dialysis in future.

CONCLUSION

The case illustrates a potential complication of peritoneal dialysis superimposed on a non-functional kidney graft. Given the fact that the graft was not affected and didn't need surgical removal which might have compromised the integrity of the peritoneum and the efficiency of peritoneal dialysis, the successful surgical

procedure allowed this patient to continue CAPD as a last resource for the management of end stage kidney disease.

Compliance with ethics requirements: The authors declare no conflict of interest regarding this article. The authors declare that all the procedures and experiments of this study respect the ethical standards in the Helsinki Declaration of 1975, as revised in 2008(5), as well as the national law.

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