Aseptic peritonitis in a peritoneal dialysis patient

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ASEPTIC PERITONITIS IN A PERITONEAL DIALYSIS PATIENT

SUMMARY

Introduction: *Patients who have repeatedly sterile peritoneal fluid cultures despite elevated peritoneal fluid white cell count should be evaluated for disorders other than usual bacterial peritonitis. Intra-abdominal pathology was responsible for less than 6 percent of cases of peritonitis. Still, the clinical outcome is these situations are much worse than in other commoner causes.*

Case report: *A 25-year-old male non-diabetic patient in PD started his complains with diffuse abdominal pain with spontaneous remissions and exacerbations, anorexia and vomiting with 3 days evolution. Laboratory results with persistent culture-negative peritoneal fluid results seemed compatible with the diagnosis of aseptic peritonitis. However, clinical status progression and peritoneal fluid amylase levels above 50UI/L led to perform an abdominal ultrasound that showed a painful non-compressible tubular structure with a diameter of > 6 mm at the base of the cecum. The patient was then submitted to a laparotomy with appendix removal.*

Discussion: *When assessing a patient with abdominal pain and clear or cloudy but aseptic peritoneal liquid, causes other than peritonitis should be excluded. Under antibiotic therapy, their clinical picture and evolution may be masked, delaying surgical resolution. In appendicitis, this delay may lead to perforation and consequent faecal peritonitis. All patients should be screened for peritoneal fluid amylase levels in order to differentiate bacterial peritonitis from intra-abdominal pathology. In all cases similar to the present one, an abdominal US/CAT scan should be promptly made.*

Key words: ***Peritonitis. Aseptic peritonitis. Peritoneal dialysis. Amylase.***

PERITONITIS ASÉPTICA EN DIÁLISIS PERITONEAL

RESUMEN

Introducción: *Los pacientes que presentan un cultivo bacteriano de líquido peritoneal repetidamente estéril, a pesar de un número de leucocitos elevado, deberán ser excluidas otras causas y no solo la peritonitis bacteriana. La patología intra-abdominal es responsable por lo menos de 6% de los casos de peritonitis, ya que el cuadro clínico en estas situaciones es mucho más grave de lo que en otras etiologías más comunes.*

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Caso clínico: *Paciente de 25 años, sexo masculino, no diabético, que inicia cuadro clínico de dolor abdominal difuso con remisiones y agravamientos espontáneos, anorexia y vómitos con 3 días de evolución. Cultivos bacteriológicos persistentemente negativos sugieren el diagnóstico de peritonitis aséptica. Incluso, considerando la evolución clínica y los niveles de amilasa en el fluido peritoneal >50UI/L, el paciente fue sometido a ecografía abdominal, la cual mostró una estructura tubular en la base del ciego, dolorosa e incomprensible, con un diámetro superior a 6 mm. Se procedió a laparotomía abdominal con extirpación del apéndice.*

Discusión: *Considerando un paciente en diálisis peritoneal con dolor abdominal, líquido de drenaje turbio más estéril, deberán ser excluidas otras causas que no son peritonitis. Sobre un tratamiento antibiótico empírico, orientado para una peritonitis bacteriana, la evolución clínica de patologías viscerales abdominales podrá ser enmascarada, atrasando la resolución quirúrgica. En la apendicitis, este atraso lleva frecuentemente a la perforación y consecuentemente a la peritonitis fecal. El hecho de controlar los niveles de amilasa en el fluido peritoneal permite diferenciar la peritonitis bacteriana de la patología visceral abdominal. Un US/TAC abdominal debe ser practicado en situaciones de este tipo sin falta ni demora.*

Palabras clave: ***Apendicitis aguda. Peritonitis aséptica. Diálisis peritoneal. Amilasa.***

INTRODUCTION

Peritonitis is a common and serious problem in patients undergoing peritoneal dialysis (PD), representing the most frequent cause of peritoneal catheter loss and technique discontinuation[1,2].

Patients who have repeatedly sterile peritoneal fluid cultures despite cloudy effluent and elevated PD fluid white cell counts should be evaluated for disorders other than usual bacterial peritonitis, including tuberculoses peritonitis, eosinophilic peritonitis, intra-abdominal disease or other non infectious diseases such well-differentiated renal cell carcinoma[3], leukemia or lymphoma[4].

Accordingly Tzamaloukas et al[5], intra-abdominal pathology (including appendicitis, cholecystitis and diverticulitis) is responsible for less than 6 percent of cases of peritonitis.

Patients with intra-abdominal causes of peritonitis, although most frequently present with similar physical, laboratory and cultural findings as do patients with dialysis associated bacterial infection, can sometimes present with only a cloudy aseptic effluent. Clues to the presence o intra-abdominal disease include symptoms related to the disease, multiple enteric organisms or an unusual enteric organism on culture[5].

The clinical outcome is these situations are much worse, with mortality correlated not only with the disease process causing the peritonitis but also with the time to diagnosis and definitive surgical intervention[6,7].

PD fluid amylase levels may be helpful in the differential diagnosis of peritonitis[8]. Levels above 50 IU/L suggest that the patient may have underlying intra-abdominal disease, since the levels do not increase with prolonged peritoneal dialysis-associated bacterial peritonitis[9,10].

CASE REPORT

25-year-old male non-diabetic patient with a personal history of high blood pressure and left eyeball enucleation (optic nerve glioma). At first consultation, end stage renal failure (unknown cause) was diagnosed and promptly began hemodialysis.

Later transferred to peritoneal dialysis by self choice, with Tenckoff catheter (swan-neck double cuffed) inserted by Seldinger modified —technique and a break-in period after 3 weeks.

In PD since then with an average creatinine clearance of 80 L/week/1.73 m^2 and weekly Kt/V of 2.5. Accordingly with the peritoneal equilibration test (PET) the patient was classified as a low average transporter.

The patient started his complains with diffuse abdominal pain with spontaneous remissions and exacerbations, anorexia and vomiting with 3 days evolution. During this time period the patient did not show increased body temperature, no exit site infection and the drainage liquid was never cloudy. Laboratorial exams showed no blood leukocitosis

and Gram and culture exams were always negative. Drainage fluid leukocyte count was less than 100 cells/mL and without neutrophil predominance. No antimicrobial therapy was initiated by that time.

At the 3rd day, pain localized to the peri-umbilical region irradiating to the lower right quadrant and the effluent leukocyte count increased above 25,000 cell/mL with more than 50% neutrophil. By that time drainage fluid became cloudy but Gram and cultural exams persisted negative. Blood white cells count maintained between normal ranges. PD fluid amylase levels were 155 IU/L.

An abdominal ultrasound (US) was performed showing a non-compressible tubular structure with a diameter of > 6 mm at the base of the cecum, concentric thickening of the inflamed appendiceal wall with corresponding pain on pressure

After careful review of the clinical evolution a surgical approach was considered. The patient was then submitted to a laparotomy (McBurney point approach), which confirmed the hypothesis of acute appendicitis. The histopathological exam of the surgical piece was compatible with acute phlegmonous appendicitis.

After appendectomy, antibiotic therapy with piperacilin plus tazobactam was initiated. PD was stopped, maintaining once daily small volume dwellings with no permanence time. The patient was transferred to hemodialysis treatment with minimum heparinization for a 3-week period time, after which he successfully returned to peritoneal dialysis without leak episodes, maintaining ultrafiltration profile and membrane transport characteristics.

This patient received a renal transplant after 3 months.

DISCUSSION

There are several etiologies for abdominal pain requiring urgent surgical approach. Appendicitis is the commonest[11].

When assessing a patient with abdominal pain and clear or cloudy but aseptic peritoneal liquid, causes other than peritonitis should be excluded. Under antibiotic therapy, their clinical picture and evolution may be masked, delaying surgical resolution. In appendicitis, this delay may lead to perforation and consequent fecal peritonitis.

Appendicitis in a PD patient can present itself with cloudy but aseptic effluent. The goals of therapy are early diagnosis and prompt surgical intervention. However, this objective is not always easily accomplished since many patients do not seek medical attention in a timely manner and since the diagnosis of appendicitis can be difficult, especially if confounding empiric antibiotic therapy for a suspected peritonitis was initiated.

While mixed infection is more common in late appendicitis, aerobic organisms predominate early in the course[12]. The most common bacteria implicated, especially in more severe clinical courses are *Escherichia coli*, *Peptostreptococcus*, *Bacteroides fragilis* and *Pseudomonas species*[13]. Recommended PD related peritonitis empiric antibiotic protocols often do not properly cover these microorganisms, allowing the infection to evolve, leading to more potential disastrous clinical courses.

In the present case, as in similar ones, the early use of abdominal ultrasound is essential, as its overall sensitivity, specificity, and positive and negative predictive values for acute appendicitis are 98, 98, 96, and 99 percent, respectively[14]. When US does not establish a sure diagnosis, an abdominal computerized axial tomography should be used for it is not operator dependent, not influenced by the overlying bowel gas and can be performed in large body habitus patients.

Since PD fluid amylase levels may be helpful in the differential diagnosis, it seems reasonable to measure it in patients with peritonitis who present an atypical course or failed to respond to the initial therapy.

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