

Bulletin de la Dialyse à Domicile

CASE REPORT :

First reported case of peritoneal dialysis infection with *lactobacillus gasseri*: when the body's friend turns against its host

(Premier cas rapporté d'infection en dialyse péritonéale à *lactobacillus gasseri* :
quand l'ami de l'organisme se retourne contre son hôte)

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Résumé

Nous rapportons un cas de péritonite à *lactobacillus gasseri* chez une patiente traitée par dialyse péritonéale.

Les bactéries *streptococcus anginosus* et *lactobacillus gasseri* sont des germes commensaux des muqueuses humaines : buccale, de l'intestin grêle, colique et vaginale. Il a déjà été décrit une infection en dialyse péritonéale à *streptococcus anginosus* responsable d'un abcès intra-abdominal, ce type de streptocoque étant largement associé à la formation d'abcès. En revanche, aucun cas d'infection péritonéale à *lactobacillus gasseri* n'a encore été décrit. Cette bactérie est un micro-organisme autochtone des muqueuses qui colonise le tube digestif du nourrisson à l'accouchement lors du passage dans la filière vaginale. Elle possède des capacités d'adaptation locales au tube digestif : tolérance au pH acide, adhésion à la muqueuse et résistance aux sels biliaires. On lui reconnaît une activité antimicrobienne et probiotique du fait de la production de bactériocine, de son rôle immuno-modulateur local, de l'atténuation du développement de l'*helicobacter pylori*, de son effet positif sur l'équilibre de la flore vaginale et de l'amélioration des diarrhées infectieuses. Ceci en fait, ordinairement, un allié de notre équilibre mais son irruption dans le péritoine en a fait une bactérie pathogène dans le cas rapporté. Le traitement de cette péritonite a celui utilisé classiquement lorsque le germe a une origine digestive, c'est à dire 3 semaines.

Mots clés : dialyse péritonéale, péritonite, *lactobacillus gasseri*

Summary

We report a case of *lactobacillus gasseri* peritonitis in a patient treated by peritoneal dialysis.

Streptococcus anginosus and *lactobacillus gasseri* bacteria are commensal organisms of human oral, small intestinal, colic and vaginal mucous membranes. An infection with *streptococcus anginosus* during peritoneal dialysis, one responsible for an intra-abdominal abscess, has already been described, this type of streptococcus being widely associated with abscess formation. In contrast, no case of peritoneal infection with *lactobacillus gasseri* has ever been described. This bacterium is native to the mucous membranes, and colonizes the digestive tract of infants during childbirth, as they pass through the vaginal canal. It has local adaptation capacities, namely tolerance to acid pH, adhesion to the mucous membrane and resistance to bile salts. It is recognized as having an antimicrobial and probiotic function due to its production of bacteriocin, its local immunomodulatory role, its attenuation of the development of *helicobacter pylori*, its positive effect on the balance of the vaginal flora and its improvement of infectious diarrhea. This usually makes it an ally that contributes to our systemic balance but its irruption in the peritoneum has made it a pathogenic bacterium. The treatment of this peritoneal infection required a classic duration of treatment of organisms of digestive origin, i.e. 3 weeks

Key words : peritoneal dialysis, peritonitis, *lactobacillus gasseri*

Mrs. C. C., 74 years old, has been treated by peritoneal dialysis since July 2017 for post-obstructive end-stage renal failure after radiotherapy for uterine cancer which occurred in 1997. She is at home on nurse-assisted CAPD. She has never had an episode of peritonitis and has no particular digestive history. On the other hand, she suffers from symptomatic orthostatic hypotension, which has been responsible for several falls.

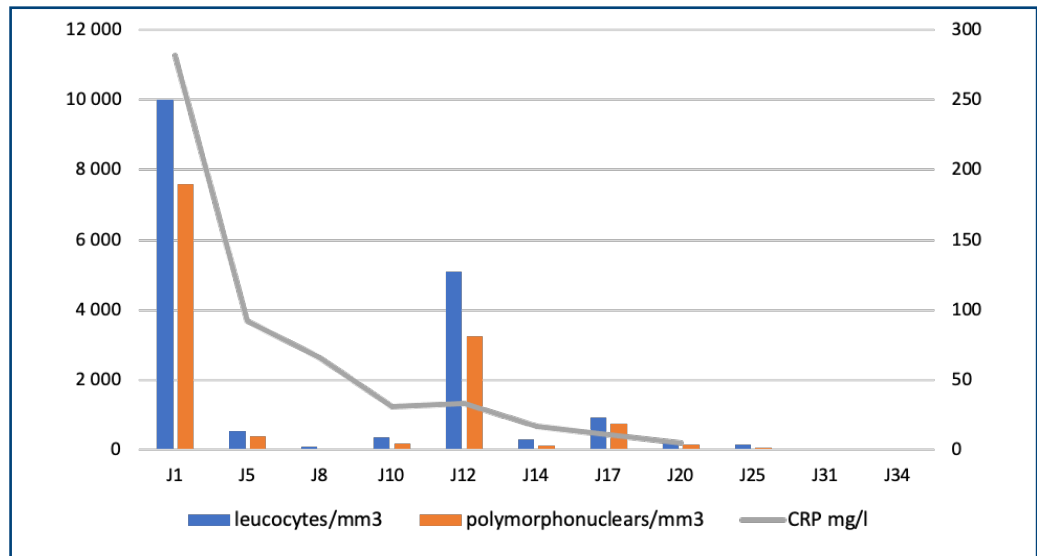
In this context, she fell at home and was referred to the emergency room, where an ankle fracture, various wounds and superficial hematomas, as well as a minor head trauma, were noted. She was hospitalized and treated for her fracture. After 72 hours of hospitalization, the peritoneal dialysis fluid was cloudy. Analysis of the dialysate showed the presence of >104 leukocytes / mm³, 76% of which were polymorphonuclear. Direct examination did not reveal any organisms. Serum CRP was 282 mg / l. The patient was afebrile, but complained of abdominal pain. An abdominal scan was performed the same day; it did not show any abscess, perforation or particular lesion.

She was treated from D1 according to the protocol of our unit, adapted to the ecology of peritonitis seen in the department, namely Vancomycin 1 g in the first bag over 6 hours, then 50 mg per 2-liter bag, 4 times a day and Cefazidime 1 g in the first bag over 6 hours then 250 mg per 2-liter bag, 4 times a day. Initially, the evolution was favorable: the abdominal pain disappeared quickly and the CRP level dropped regularly (92.5 mg / l on D5 and 31.2 mg / l on D10), as did the number of leukocytes present in the dialysate. (549 / mm³ at D5 and 101 / mm³ at D8) [figure 1]. On D3, the culture indicated two micro-organisms: *streptococcus anginosus* and *lactobacillus gasseri*. Given the presence of *lactobacillus gasseri* in the culture and its possible resistance to Vancomycin, bacteriologists initially recommended replacing Vancomycin with Amoxicillin, which was administered at a dose of 250 mg per 2-liter bag, 4 times a day from D4.

Subsequently, the evolution was marked by a rise in leukocytes in the dialysate from D10 [Figure 1] at 360 / mm³, of which only 23% were polymorphonuclear, then 5100 / mm³ on D12, of which 64% were polymorphonuclear. However, the patient was doing well; she was afebrile and the CRP level kept on decreasing (33.4 mg / l on D12). A second abdominal scan was performed, which showed only an inflammatory aspect of the peritoneal leaflets and uncomplicated diverticulosis. The antibiogram for *lactobacillus gasseri* having been completed, it was then decided to resume treatment with Vancomycin, to which the bacteria was sensitive while maintaining Cefazidime. The patient was therefore treated by this combination from D12 to D23. The outcome was then favorable, with the number of leukocytes in the dialysate becoming insignificant and the absence of a recurrence of peritonitis after stopping treatment.

In the meantime, the patient returned to orthopedics for the treatment of her fracture. On D35, she presented with melena and underwent a rectosigmoidoscopy, which showed uncomplicated diverticulosis and the absence of mucosal lesions. The esogastroduodenal endoscopy showed only minimal esophagitis. No lesion could explain the bleeding, and an ischemic cause was then suggested. The bleeding did not recur.

In this patient, it is likely that the peritoneal infection occurred by translocation from an ischemic intestinal mucosa during episodes of repetitive orthostatic hypotension presented by the patient, and in particular during the severe episode that resulted in her traumatic fall with fracture. A few cases have been reported in the literature, mainly in diabetic patients, which was not the case with our patient [1, 2].



↑ Figure 1. Biological course of peritoneal infection

The treatment of this peritoneal infection required a standard duration for organisms of digestive origin, i.e. 3 weeks with a somewhat deceptive and fluctuating evolution of the number of polynuclear cells of the dialysate, but with lasting sterilization of the latter at the end of the treatment.

The bacteria *streptococcus anginosus* and *lactobacillus gasseri* are commensal organisms of the human oral, small intestinal, colic and vaginal mucous membranes. An infection with *streptococcus anginosus* during peritoneal dialysis, one responsible for an intra-abdominal abscess, has already been described, this type of streptococcus being widely associated with abscess formation [3]. In contrast, no case of peritoneal infection with *lactobacillus gasseri* has ever been described. This bacterium is a microorganism native to the mucous membranes, which colonizes the digestive tracts of infants during childbirth, as they pass through the vaginal canal. It has capacities that enable it to adapt to the digestive tract, namely tolerance to acid pH, adhesion to the mucous membrane and resistance to bile salts. It is recognized as having an antimicrobial and probiotic function due to its production of bacteriocin, its local immunomodulatory role, its attenuation of the development of helicobacter pylori, its positive effect on the balance of the vaginal flora and its improvement of infectious diarrhea [4]. This usually makes it an ally that contributes to our systemic balance, but its irruption into the peritoneum has made it a pathogenic bacterium.

CONFLICT OF INTEREST

The authors declare no conflict of interest for this article.

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Genomic and phenotypic evidence for probiotic influences of *Lactobacillus gasseri* on human health.

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