

***Nocardia asteroides* PERITONITIS DURING CONTINUOUS AMBULATORY PERITONEAL DIALYSIS**

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SUMMARY

This paper reports a case of peritonitis by *Nocardia asteroides* during continuous ambulatory peritoneal dialysis in a man who had systemic lupus erythematosus and chronic renal failure. Diagnosis was established by microscopic examination (Gram and Kinyoun) and culture of centrifuged dialysis fluid and the patient was treated with Trimethoprin-Sulfamethoxazole by intraperitoneal route.

KEY WORDS: *Nocardia asteroides*; Peritonitis; Peritoneal dialysis

INTRODUCTION

Peritonitis is a frequent complication of renal failure treatment by continuous ambulatory peritoneal dialysis (CAPD). In the great majority of peritonitis episodes the causative agents are bacteria, specially staphylococcal species. An increasingly number of peritonitis episodes are also caused by fungi, most of them belonging to *Candida* genus, but an increasing number of unusual aetiological agents have been reported¹¹. We report a case of peritonitis caused by *Nocardia asteroides* during continuous ambulatory peritoneal dialysis.

CASE REPORT

The patient was a 38-year-old white farmer male, born and living in the rural area of Santa Maria, RS, Brazil, who had systemic lupus erythematosus and chronic renal failure. He had been undergoing CAPD for six years and had two episodes of peritonitis over this period, both with negative cultures. On November 8, 1988 he was hospitalized at the Nephrology Department of the Santa Maria University Hospital presenting a 7-day history of cloudy dialyate. At the clinical examination he showed abdominal pain, fever and prostration. The dialysis fluid was turbid with a white cell count of 667/ μ l (67% polymorphs and

33% lymphocytes). The microscopic examination (Gram and Kinyoun) from the centrifuged sediment revealed long branching, gram-positive and partially acid-fast filaments and fragmented bacillary elements consistent with *Nocardia* sp. Centrifuged deposits were cultured aerobically on brain-heart-infusion broth, Lowenstein-Jensen and Sabouraud's dextrose agar, incubated at 25 °C. Colonies on Lowenstein-Jensen appeared on 7th day and were folded, moist glabrous and orange in color. On Sabouraud's dextrose agar colonies appeared on 5th day and were glabrous, folded, granular and orange in color, covered later by an overgrowth of short white aerial mycelium. After 6th day incubation brain-heart-infusion broth grew branching gram-positive and partially acid-fast filamentous and bacillary elements. All colonies were identified as *N. asteroides* according YA-ZAWA & MIKAMI¹².

Ultrasonographic study carried out on November 19, 1988 showed a liquid collection between gall-blader, liver and the intestinal folds, related with the limited infection. Cephalotin was administered for two days, right after one ampoule of Trimethoprin-Sulfamethoxazole per liter dialysed during four weeks. The patients symptomatology improved and on November 24, 1988 the dialysis fluid showed 65 cells/ μ l, microscopic examination and cultures were also negative. On November 29, 1988 the patient left the hospital

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and the ultrasonographic study on January 9, 1989 was normal. A new peritonitis episode was diagnosed on July 16, 1989 when *Staphylococcus aureus* grew in culture. The patient died at home on November 1989.

DISCUSSION

The soil-inhabiting aerobic actinomycete *N. asteroides* is an increasingly recognised opportunistic agent of infection in immunologically incompetent hosts⁶. The most common site of infection are the lungs, resulting from inhalation of spores, but primary pulmonary infections may be of a minor, transient, benign or chronic nature, without clinical pulmonary disease. However, care

must be taken when diagnosing nocardiosis in extrapulmonary sites as the primary lesions, because dissemination may occur in the absence of overt lung symptomatology, causing metastatic lesions anywhere in the body⁷.

Peritonitis by *N. asteroides* complicating CAPD was first reported by ARFANIA et al. (1981) in a 70-year-old man with chronic interstitial nephritis¹. RUBIN et al. (1987) made reference to one case, including with 17 cases of *Candida* peritonitis⁸. CHAN et al. (1990) and KACZMARSKI et al. (1990) reported two other cases^{2,5}. In all cases *N. asteroides* was cultured from dialysis fluid and nocardiosis seems restricted to the peritoneal cavity, gaining access through the catheter (Table 1).

Table 1
Nocardia asteroides peritonitis during continuous ambulatory peritoneal dialysis.

Author	Patient	Previous episodes	<i>N. asteroides</i> treatment	Evolution
1. Arfania et al. (1981)	70,m, chronic interstitial nephritis; CAPD for 4 years	2 <i>Staphylococcus epidermidis</i>	Sulfisoxazole (500mg/1 dialysed) during 6 weeks	Negative culture in 4 days; without symptoms after 1 year of observation
2. Rubin et al. (1987)	made reference to one case, including with 17 cases of <i>Candida</i> peritonitis			
3. Chan et al. (1990)	60,m, polycystic disease of kidneys; CAPD for 5 years	1 negative culture 1 <i>Streptococcus viridans</i>	Trimethoprin-Sulfamethoxazole (1 ampoule/1 dialyzed) during 3 weeks	Dialysed cleared in 4 days; without symptoms after 8 weeks of observation
4. Kaczmariski et al. (1990)	58,f; CAPD for 2 years	9 <i>Staphylococcus</i> coagulase negative 1 <i>Proteus mirabilis</i>	Ceftazidime (125mg/1 dialysed) during 7 days; catheter removal	Dialysed cleared in 2 days; recurrent in 12 days; improved after catheter removal
5. Present case	38,m, systemic lupus erythematosus and chronic renal failure; CAPD for 6 years	2 negative cultures	Trimethoprin-Sulfamethoxazole (1 ampoule/1 dialyzed) during 4 weeks	Dialysed cleared in 7 days; peritonitis by <i>S. aureus</i> in Jun 89; died in Nov 89

Adequate and long-term treatment is necessary in *Nocardia* infections because the patients are usually debilitated or with his defenses compromised³. Although sulfonamides have generally been considered the treatment of choice in nocardiosis^{3,6,10}, the optimal therapy for the infection has not been established. The more effective treatment is still the combination of Trimethoprin (160 to 220 mg) and Sulfamethoxazole (800 to 1250 mg) twice daily^{3,10}. The preferred route of drugs administration in the treatment of CAPD peritonitis by *N. asteroides* is intraperitoneal because this method facilitates self-administration, permits a high level of the drugs in the peritoneal cavity and good absorption through the peritoneum, maintaining adequate serum levels^{4,9}.

Cutaneous barrier represent an important element in host protection against microbial colonization and infection. In peritoneal dialysis, the insertion of catheters disrupts this anatomical barrier and permits potential pathogens like *N. asteroides* to gain access to the peritoneal cavity. In addition, advanced renal failure or the underlying cause, such as systemic lupus erythematosus in the present report, results in the depression of the immune defenses. In our patient inoculation through catheter must be considered, but the readiness on diagnostic of *N. asteroides* infection and the prompt response to treatment made catheter removal unnecessary.

RESUMO

Peritonite por *Nocardia asteroides* durante diálise peritoneal ambulatorial continuada.

É relatado um caso de peritonite por *Nocardia asteroides* durante tratamento por diálise peritoneal ambulatorial continuada em paciente com lupus eritematoso sistêmico e insuficiência renal crônica. O diagnóstico foi feito pelo exame direto (Gram e Kinyoun) e cultivo do sedimento do líquido de diálise e o tratamento com Trimetoprin-Sulfametoxazole intraperitoneal.

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