Case Report

Relapsing pyrogenic reactions due to *Xanthomonas maltophilia* in a dialysis patient with a long-term central venous catheter

M. Ganadu¹, G. L. Mura¹, A. M. Campus¹, G. L. Cherchi¹, V. Fanelli¹, L. Calvisi¹, G. Canu¹ and G. B. Cherchi²

¹Nephrology and Dialysis Unit and ²Clinical Pathology Laboratory, A. Segni Hospital, Ozieri (SS), Italy

**Key words:** central venous long-term catheter; pyrogenic reaction; relapsing

**Introduction**

Bacterial infections, generally due to common pyogenic bacteria, remain a major cause of morbidity and mortality in uraemic patients treated with chronic haemodialysis [1,2].

We report on a single case of relapsing 'pyrogenic-like' reactions due to the colonization of a permanent central venous catheter by *Xanthomonas maltophilia* in a patient on RDT.

**Case report**

A 72-year-old male was admitted to the renal unit in November 1994 to begin dialysis treatment. He suffered from CRF due to chronic vascular disease with hypertension and generalized atherosclerosis.

Due to the high risk of failure associated with a-v fistulas, we preferred to insert percutaneously a long-term central double-lumen venous catheter in the right subclavian vein, through a short subcutaneous tunnel. Dialysis was performed according to a standard schedule (3.30 h x 3) using a virtually sterile modified acetate membrane filter and a bicarbonate powder cartridge system.

During the first 3 months of treatment, the patient did not experience any problems during or after the dialysis session. Suddenly, during the second hour of a dialysis session, he had a first episode of ingravescent chills typically observed in a pyrogenic reaction. The bicarbonate system was replaced and an i.v. hydrocorticosteroid bolus was administered. The patient did not respond satisfactorily to treatment and the symptoms did not disappear until after the end of the dialysis session. The patient always had the same reaction during the second and third hour of subsequent dialysis sessions.

We performed all possible changes regarding the disposable equipment used in dialysis treatment, including the membrane, blood lines and sterilization apparatus. However, this did not result in alleviation of the episodes. As the chill appeared to become a tremor, we also performed isovolumetric dialysis treatment to exclude possible cerebrovascular failure. Again, this form of treatment was not successful. The symptoms receded only at the end of the dialysis treatment and the patient always stated that he experienced no symptoms during the interdialysis period.

White blood cell counts were repeatedly performed, before (WBC 5.9 x 10⁹/l) (normal range 4.8-10.8 x 10⁹/l) during (WBC 6.9 x 10⁹/l) and after (WBC 9.4 x 10⁹/l) dialysis treatments. An EEG was normal during the episode and thoracic radiographs were within normal limits. The patient was then admitted to the Nephrology Unit for observation.

A slight increase in body temperature (38°C), lasting several minutes, was observed 30 min after the end of the dialysis treatment. We then performed serial peripheral blood cultures that were always positive for *Xanthomonas maltophilia*. An antibiogram was performed and the pathogen was sensitive only to gentamicin, chloramphenicol and ciprofloxacin. We started i.v. treatment with 100 mg of ciprofloxacin per day and the patient did not experience a reaction or fever during or after the next dialysis sessions. The i.v. treatment was continued for 6 days and then administered orally for another 6 days. The permanent catheter was then removed and cultures demonstrated a massive growth of *Xanthomonas maltophilia*. Blood cultures were thereafter always negative.

**Discussion**

Most uraemic patients start dialysis with a central venous catheter. In some of these patients, especially the elderly, or those with vascular pathology and due to difficult management of the a-v fistulas, the central venous catheters are used on a permanent basis. Long-
term devices and surgical techniques to insert them have been developed.

This fact is not without consequences in the management of the haemodialysis patients, especially with regard to the incidence of infections. Analysis of the risk factors for the development of bacterial infections in adult dialysis patients, the type of angioaccess device (catheter versus native fistula) seems to play a significant role [3].

*Xanthomonas maltophilia*, a type of Pseudomonas, is a well known Gram-negative opportunistic bacteria that grows easily in dialysate fluids and it can release small molecular pyrogens which are different from LAL-positive endotoxin-like substances [4,5]. Moreover, it is an emerging nosocomial pathogen in immunocompromised patients and presents a therapeutic challenge because of its tendency to exhibit multiple resistances [6]. A case of *X. maltophilia* peritonitis in a patient undergoing peritoneal dialysis and other cases of infection in intensive care units have been described [7,8].

In our patient it was unique that he had a pyrogenic-like reaction only during and after the second hour of the haemodialysis session and was symptom-free during the interdialysis period. This suggests that during treatment, the blood flow along the catheter mobilizes the bacteria, or its pyrogenic substances, which induce production of cytokines that finally cause the clinical pyrogenic reaction. Because the patient was well during the interdialysis period, we hypothesized that the catheter colonization was always present, but not the infection, even if this distinction is often difficult [6]. However, as *Staphylococcus aureus* and other pyogenic bacteria, rather then opportunistic agents, are the major causes of catheter colonization and secondary infections in dialysis patients, we report this first case of *X. maltophilia* central venous catheter colonization with bacteraemia and pyrogenic reaction in a haemodialysis patient.

References


Received for publication: 17.6.1995

Accepted in revised form: 6.9.1995