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Case Report

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## *Erysipelotrix rhusiopathiae* Peritonitis in a Patient on Continuous Ambulatory Peritoneal Dialysis

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### Abstract

*Erysipelothrix rhusiopathiae* is a facultative anaerobic, small, Gram-positive rod. It is a rare cause of peritonitis in patient on continuous ambulatory peritoneal dialysis. The presented case is the first Balkan case of *E. rhusiopathiae* peritonitis published in the literature available to the authors and the fourth world case.

**Keywords:** Continuous ambulatory peritoneal dialysis (CAPD); *Erysipelothrix rhusiopathiae*; Peritonitis; Gram-positive rod

### Introduction

*Erysipelothrix rhusiopathiae* (*E. rhusiopathiae*) is a facultative anaerobic, small, Gram-positive rod. The organism is ubiquitous and able to persist for a long period of time in the environment, often in the soil contaminated by animal excretion (swine, dogs, poultry, and other domestic animals) [1]. Infection due to *E. rhusiopathiae* in humans is occupationally related; occurring as a result of contact with contaminated animals, their products, or soil [2]. *E. rhusiopathiae* is a rare cause of peritonitis in patients on continuous ambulatory peritoneal dialysis (CAPD). The presented case is the first Balkan case of *E. rhusiopathiae* peritonitis published in the literature available to the authors and the fourth world case.

### Case Report

A 62-years old housewife with end-stage renal failure had been on CAPD for 9 years. She came to University hospital Clinical Center Banja Luka, Bosnia and Herzegovina, with one day history of fever, abdominal pain and cloudy peritoneal fluid. She was admitted to the Department for Nephrology. On the first day, the peripheral white blood cells (WBC) were  $18 \times 10^9/L$  and CRP level was 97,9 mg/dL. The CAPD fluid had a white cell count (WCC) of  $>100 \times 10^6/L$  with no red cells and proteins of 445 g/L. The empirical therapy was started with intravenous and intraperitoneal administration of vancomycin. Her abdominal pain failed to settle, and by day 3 signs of severe peritonitis were present. The procalcitonine level was 4,6 ng/mL. Blood cultures were taken and repeated CAPD fluid had a WCC of  $>100 \times 10^6/L$ .

In the Department of Microbiology, after receiving the samples, peritoneal fluid was inoculated in two bootless for blood culture and stored in the signal blood culture system BacT/ALERT, Biomerieux, France. Gram stain of peritoneal fluid showed no bacteria. The fluid from the positive bottles was inoculated to Columbia agar and incubated on 35°C in microaerophilic atmosphere (5-10% CO<sub>2</sub>). The temperature range for *E. rhusiopathiae* is from 5-44°C, and optimal from 30-37°C [2]. After 48 hours of incubation, the colonies were small, circular, with a diameter of 1 mm opalescent, regular, with a narrow zone of  $\alpha$ -haemolysis. On the Gram stain, the small, Gram-positive, non-spore-forming bacilli have

been observed. For the identification VITEK ID GP card was applied on the automated system (VITEK 2 System, Biomerieux, France). After 12 hours final results have shown that *Erysipelothrix rhusiopathiae* was found. Antimicrobial susceptibility testing was done according to the recommendation for infrequently isolated or fastidious bacteria [3] and the results showed that isolated strain of *E. rhusiopathiae* was sensitive on penicillin, ampicillin, amoxicillin/clavulanic acid, cephalosporins and ciprofloxacin and resistant on vancomycin and gentamycin. The two paired blood cultures taken from the patient after 5 days of incubation remained sterile. Since our patient had the history of documented allergic reaction on penicillin, intravenous ciprofloxacin 400 mg twice daily was given, as well the intraperitoneal administration of ciprofloxacin for the therapy of *E. rhusiopathiae*. After 48 hours of the therapy, the patient was without fever, with clinical improving. Her abdominal pain settled, peritoneal fluid became clearly, and inflammatory parameters (leukocyte, CRP) started to decrease. The repeated peritoneal analysis showed clearance of the peritoneal fluid, with decreasing the protein and WBC count to the normal level. After 21 days of the therapy, the patient was released from the clinic as healed and remained on the CAPD.

### Discussion

Before this hospitalization, our patient had an episode of peritonitis 21 days earlier and she was admitted to the hospital. Along with symptoms of peritonitis, she has noticed non specific red lines resembling reddish injuries on her hands few weeks after dealing with poultry meat farming in her own household. The checking of the patients documentation during that peritonitis episode showed that in the peritoneal fluid *Enterococcus* spp. was isolated and vancomycin was administrated in doses of 15 mg/kg IV every 12 hours, lasting 14 days and intraperitoneally, 30 to 50 mg/L exchange. At the end of that hospitalization, she was clinically improved and discharged from the hospital. No expecting, after 10 days at home, the symptoms of the peritonitis appeared suddenly and she was hospitalized again.

Until today, only three cases of such infection have been described worldwide. The first case occurred 1997 in Houston, Texas in a rancher

who cut his hand on a barbed wire fence around an animal enclosure 2 weeks before admission [4]. The second case occurred in England and it was documented in 2004 [5], and in Europe there were no reported cases for 10 years. The third case was documented 2010 in Korea [6]. Although *E. rhusiopathiae* is usually reported as an occupational pathogen and typically causes a cutaneous infection; our case demonstrates a non typical manifestation of disease (peritonitis). For clinical microbiology it is important to notice that the confusion with *Enterococcus* spp. can arise because the colonial appearance, negative catalase reaction and Gram stain [7]. The importance of inoculating sterile fluids and tissues into an enrichment broth is evidenced earlier [7]. The glycopeptide resistance of this pathogen is of particular note as vancomycin is often used as empiric treatment of Gram-positive peritonitis in patients on CAPD [8].

In our country such forms of peritonitis could occur, as Bosnia and Herzegovina is a country with widespread animals farming. There is a need to pay the attention for the presence and cure of this pathogen.

### Disclosure Statement

The authors have no conflict of interest to declare.

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