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SHORT COMMUNICATION

# Severe Diarrhoea Caused by *Aeromonas veronii* Biovar Sobria in a Patient with Metastasised GIST

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Abstract

This report describes the isolation of *Aeromonas veronii* biovar sobria as the causative enteropathogen of diarrhoea in an oncological patient after failure of detection of other infectious agents. The case points out the severe and long course of the infection, the diagnostic dilemma, and the prompt recovery after antibiotic treatment.

Key words: *Aeromonas veronii,* diarrhoea, foodborne pathogens, gastroenteritis, infection

The three major *Aeromonas* species pathogenic in humans are *Aeromonas hydrophila*, *Aeromonas caviae* and *Aeromonas veronii*. These bacteria are associated with enteric and non-enteric diseases in both immunocompromised and immunocompetent patients (Janda and Abbott, 1998; von Graevenitz, 2007). In a study analysing 582 stool samples from patients with acute diarrhoea in Brazil *A. caviae* (19.5%) and *A. veronii* (6.5%) were the most frequently isolated enteropathogens (Hofer *et al.*, 2006). Moreover, *A. veronii* was reported to be the causative pathogen of 1% of traveler's diarrhoea (Vila *et al.*, 2003). *Aeromonas veronii* is known to produce more enterotoxins compared to other *Aeromonas* species (Trower *et al.*, 2000). In accordance to that, the enterotoxin genes *alt* and *act* were found in 48% and 84%, respectively, among 25 *Aeromonas veronii* biovar sobria isolates from diarrhoal patients in India (Sinha *et al.*, 2004).

In August 2006 a 49-year-old woman was admitted to our hospital with nausea, vomiting and watery greenish diarrhoea (10 times per day) for the last 10 days. Prior to admission, two stool samples had been already tested negative for conventional pathogens causing gastro-enteritis like *Salmonella*, *Shigella*, *Campylobacter*, *Yersinia*, enteropathogenic *E. coli* and norovirus. The patient suffered from a gastrointestinal stroma tumour (GIST) the diagnosis of which was made first in 2003. At that time the tumour was already widely spread in the upper abdomen, so that the tumour masses were only partly resected and an adjuvant therapy with imatinib was started. In May 2006 the patient underwent resurgery including gastrectomy, resection of the left pancreas, nephrectomy, splenectomy and resection of the left colon flexure under a curative aspect.

At admission time, the patient had a temperature of 38.2°C and was tachycardic. She neither had been abroad nor had ingested a special feature of food. Laboratory investigation revealed a white blood cell count of 21 170 cells/µl (80.3% neutrophils), elevated C-reactive protein (16.03 mg/l) and hypokalaemia (3.2 mmol/l). Clinical examination and X-ray-examination of the thorax were without pathological findings. Abdominal echography showed cholecystolithiasis, hepatomegaly with inhomogenous parenchyma and intestinal loops filled with fluid. A pneumonia of the right inferior lobe and expansion lesions suspicious to metastases in the peritoneum, the mesenteric lymph nodes, the lung and the liver were diagnosed by computer tomography. From a stool sample collected

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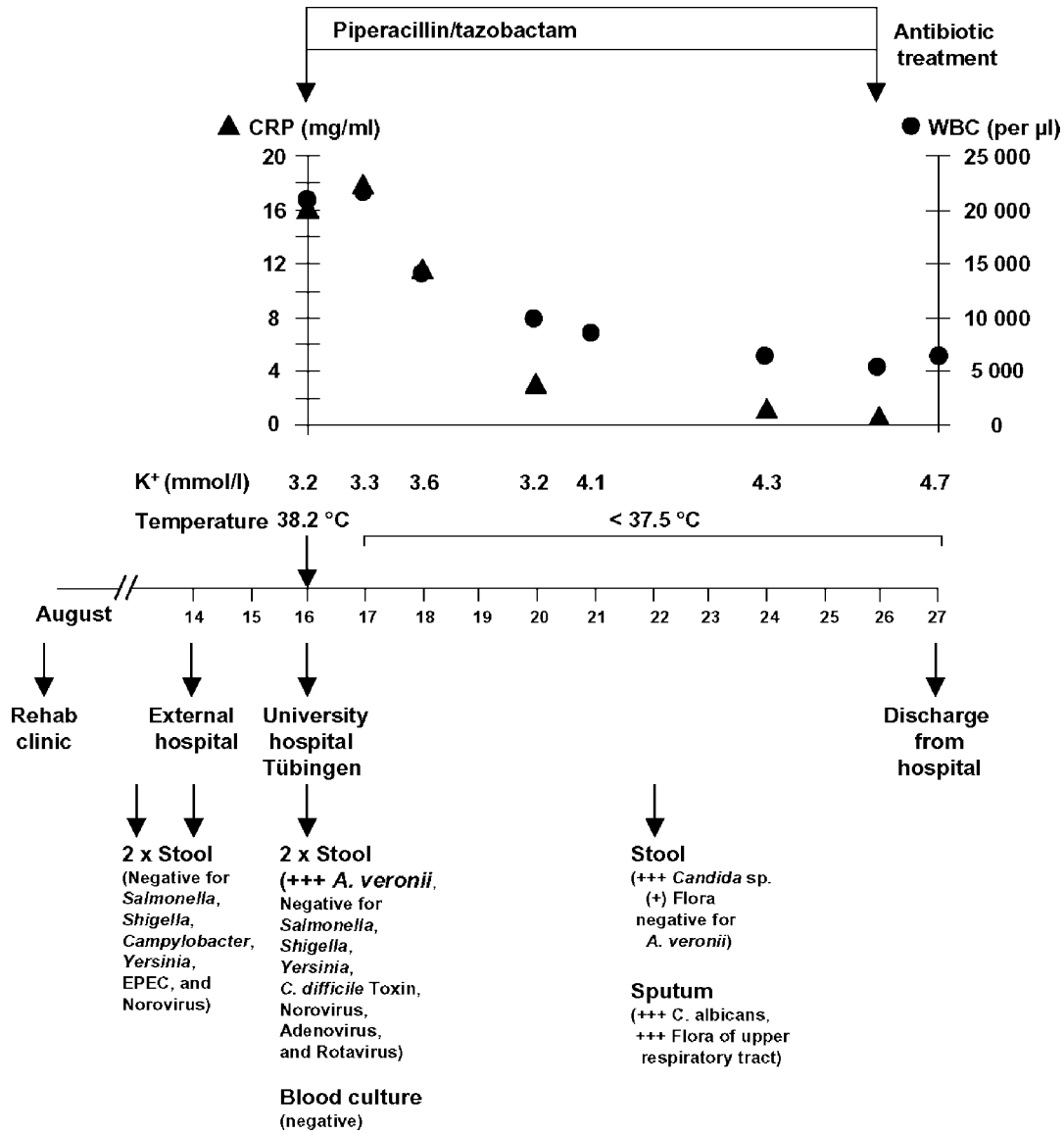


Fig. 1. Summary of the patient's laboratory data, antibiotic therapy and results of microbiological analyses. CRP = C-reactive protein, WBC = white blood cells.

immediately after admission *Aeromonas veronii* biovar sobria was cultivated on sheep blood agar with high bacterial counts. The pathogen was identified by β-haemolysis, positive oxidase reaction, negative aesculin hydrolysis and VitekII identification system (bioMérieux, Nürtingen, Germany) and tested for antibiotic susceptibility by agar disk diffusion method following the Clinical and Laboratory Standards Institute (CLSI) guidelines. The isolate was susceptible to gentamicin, tobramycin, piperacillin, piperacillin/tazobactam, cefuroxime, cefotaxime, cotrimoxazole, levofloxacin, ciprofloxacin and meropenem and resistant to ampicillin and ampicillin/sulbactam. Cultivation of 3 stool samples on selective agar for *Salmonella* and *Shigella* species, *Campylobacter* spp. and analysis of one stool sample for *Clostridium difficile* toxins yielded negative results. Moreover, the patient's stool was negative for rotavirus and adenovirus tested by EIA and for norovirus tested by PCR. A blood culture taken at the day of admission was negative, cultivation of a sputum taken at sixth day after admission yielded pharyngeal flora. An empirical antibiotic treatment was started immediately after admission with piperacillin/tazobactam (3 × 4.0/0.5 g). Clinical and laboratory findings improved dramatically and the patient was discharged 10 days after admission (Fig. 1).

Since *Aeromonas* species have been isolated from environmental and food samples (Pin *et al.*, 1994), it is likely that the patient had ingested *Aeromonas*-contaminated food. For example, frozen fish and organic vegetables have been reported to be contaminated with *Aeromonas veronii* (Castro-Escarpulli *et al.*, 2003; McMahon and Wilson, 2001).

Infections with *Aeromonas veronii* have been described in immunocompetent adults (Roberts *et al.*,

2006). Despite the severe underlaying disease, the present patient was not immunocompromised at the time of *Aeromonas* infection. We suppose that the early administration of antibiotics was critical for the good course of disease. However, the cause of pneumonia remains unclear, since blood culture of the patient was negative, no sputum sample was sent to our laboratory at admission, and no bacterial pathogen was isolated from a sputum 6 days after admission when antibiotic treatment had been already started.

According to uniform hospital-wide guidelines based on generally accepted recommendations like those from the Robert Koch-Institute (RKI) on a national and the Centers for Disease Control and Prevention (CDC) on an international level, the patient was isolated immediately after admission to prevent transmission of enteropathogens. Since nosocomial outbreaks caused by *Aeromonas* spp. had not been reported so far, the isolation was stopped after the pathogen was detected from stool.

Although *A. veronii* is a well characterized enteropathogen, gastroenteritis caused by *Aeromonas* species is obviously underdiagnosed, since it has been reported that aeromonads cause up to 13% of gastroenteritis cases in the United States (Buchanan, 1984). In our laboratory *Aeromonas* species have been isolated from stool very seldom so far (only 0.7% of overall stool samples in 2005–2006). Generally, *Salmonella*/*Shigella*-, *Campylobacter*- and *Yersinia*-selective agars are used for diagnosis of bacterial pathogens causing gastroenteritis. When required by the clinicians, stool samples are additionally cultivated on sheep blood agar in our laboratory to specify the intestinal flora (*Staphylococcus aureus*, β-haemolytic streptococci). However, only 24.9% of overall stool samples were cultivated on sheep blood agar in 2005–2006 in our laboratory. *Aeromonas* hydrophilia and *A. veronii* biovar sobria are easy to diagnose by beta-haemolysis on sheep blood agar. Moreover, a common characteristic of all *Aeromonas* species is the positive oxidase reaction, which allows to distinguish them from *Enterobacteriaceae*. Therefore, we propose that sheep agar should be more frequently used for microbial diagnosis from stool, at least when the specimen is negative for the common bacterial pathogens causing gastroenteritis.

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