**CASE REPORT**

Fatal *Pasteurella dagmatis* peritonitis and septicaemia in a patient with cirrhosis: a case report and review of the literature

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**Microbiology**

Specimens of blood were inoculated into aerobic (vented) and anaerobic (unvented) media (BactAlert; Cambridge, UK). Gram negative cocobacilli were isolated from both aerobic and anaerobic bottles after nine and 12 hours, respectively. Ascitic fluid was inoculated into blood culture media as above and also cultured directly on to MacConkey agar, 5% horse blood in Columbia agar (Oxoid, Basingstoke, UK), and chocolate blood agar incubated at 37°C in air and 5% CO₂, in addition to Anaerobe Agar (BioConnections, Slough, UK) incubated at 37°C in an anaerobic cabinet (Don Whitley, Shipley, UK). Direct culture and enrichment cultures of ascitic fluid also grew a Gram negative cocobacillus. These isolates were identified using API 20 NE (Bio-Merieux UK Ltd, Basingstoke, UK). A presumptive identification of *Pasteurella multocida* was made and the isolate was referred to the laboratory of health care associated infection, Health Protection Agency, Colindale, London, UK. Analysis was carried out using the Sherlock microbial identification system (MIDI Inc, Newark, Delaware, USA), with additional biochemical tests, and the isolate identified as *Pasteurella dagmatis*. The organism was sensitive in vitro to penicillin, gentamicin, and ciprofloxacin (VITEK system; Bio-Merieux UK Ltd).

**Discussion**

Spontaneous bacterial peritonitis occurs in approximately 15% of patients with cirrhotic liver disease and ascites. The causative organisms are usually enteric Gram negative bacilli or streptococci. We report the first case of spontaneous bacterial peritonitis and septicaemia caused by an unusual organism, *P. dagmatis*, following a scratch from a domestic animal.

*Pasteurella* species are Gram negative cocobacilli that commonly colonise the oropharynx of healthy domestic animals—especially cats (90%) and dogs (66%). They are well recognised as veterinary pathogens, and over recent years, increasingly commonly as a cause of human infection. *Pasteurella multocida* is the most frequently reported species.

In 1985, members of the genus *pasteurella* were reclassified into 11 species including *P. multocida* and *P. dagmatis*. *Pasteurella multocida* and *P. dagmatis* cannot be distinguished morphologically and the API 20 NE system, like most commercially available identification systems, cannot distinguish between the two because *P. dagmatis* is not in its current database. This explains why the organism in our patient was not immediately recognised as *P. dagmatis*. It may also explain the low frequency of reports of *P. dagmatis* infection. A positive urease test distinguishes *P. dagmatis* from *P. multocida*, but...
Take home messages

- We report a case of Pasteurella dagmatis peritonitis and septicemia in a patient with cirrhosis, which occurred after she was scratched by a pet dog.
- Despite appropriate antibiotic treatment the patient died of the infection.
- Pasteurella dagmatis is a relatively recently described species, which is rarely reported as a human pathogen, and bacterial peritonitis caused by this organism has not been reported previously.
- This species may be misidentified unless commercial identification systems are supplemented by additional biochemical tests.
- Because of the high mortality rate, appropriate antibiotic treatment should be instituted as soon as possible, and first line antibiotic treatment should include a β lactam agent.

In our patient, P dagmatis caused spontaneous bacterial peritonitis, septicemia, and ultimately death. In patients with cirrhosis and ascites, only one third of cases of spontaneous bacterial peritonitis are caused by non-enteric organisms. Pasteurella multocida as a causative organism is particularly rare, with only 15 documented cases. There are no previous reports of P dagmatis in this setting.

Pasteurella infection should be suspected as a cause of spontaneous bacterial peritonitis and septicemia in patients immunocompromised by cirrhosis, especially if there is a history of exposure to domestic animals. In view of the high mortality, appropriate antibiotic treatment should be instituted as soon as possible, and first line antibiotic treatment should include a β lactam agent. Speciation may not influence clinical management, but accurate identification of pasteurella to species level will help characterise the prevalence, antibiotic susceptibilities, and pathogenic potential of P dagmatis.

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