Raoultella planticola bacteraemia

We report a case of polymicrobial bacteraemia and ascending cholangitis involving Raoultella planticola (formerly Klebsiella planticola). The case prompted a comprehensive literature search of English language articles indexed in Medline, Embase and Google Scholar databases. A review article (Yokota et al., 2012) summarizing six cases of human infection due to this organism was retrieved. Our search revealed four additional cases (Castanheira et al., 2009; Kim et al., 2012; Teo et al., 2012). Two of these cases (Castanheira et al., 2009) were associated with fatal outcomes and are briefly described below. This brings the total number of cases reported, including ours, to 11.

A 59-year-old male presented to our hospital with acute onset of fever, chills, rigors, nausea, abdominal pain and jaundice 3 weeks after undergoing endoscopic retrograde cholangiopancreatography (ERCP) and placement of a biliary stent for newly diagnosed pancreatic carcinoma. A diagnosis of post-ERCP ascending cholangitis was suspected. Two sets of peripheral blood cultures were obtained and empiric therapy with piperacillin–tazobactam was initiated. Both sets of blood cultures grew R. planticola, Proteus mirabilis and Enterococcus faecalis. The R. planticola and P. mirabilis isolates were susceptible to piperacillin–tazobactam, ceftriaxone, imipenem, ciprofloxacin, gentamicin and trimethoprim–sulfamethoxazole. The E. faecalis isolate was susceptible to ampicillin, gentamicin and vancomycin. Treatment with 4.5 g piperacillin–tazobactam intravenously every 6 h was continued. Four days following admission the patient underwent a second ERCP for removal of the stent and insertion of a new one. The patient responded favourably to therapy and was discharged to complete a total of 14 days of intravenous piperacillin–tazobactam therapy.

The first case described by Castanheira et al. (2009) involved an 83-year-old woman who was previously hospitalized for community-acquired pneumonia. Upon readmission for respiratory complaints, the patient was found to have a multidrug-resistant Acinetobacter baumannii strain grown from a tracheal aspirate, as well as a blood culture positive for R. planticola. The second case involved a 64-year-old male with B-lymphoblastic leukaemia. After induction chemotherapy the patient experienced neutropenia and several infection-related complications including bacteraemia due to R. planticola. Notably, both of these cases involved Klebsiella pneumoniae carbapenemase-producing Raoultella isolates that were associated with fatal infections. This is in contrast to the favourable outcome observed in other previously reported cases and the current one.

Similarities of our case to the six summarized by Yokota et al. (2012) and the additional four reported by other authors (Castanheira et al., 2009; Kim et al., 2012; Teo et al., 2012) include an association with invasive procedures or trauma (8/11, ERCP in two), an intra-abdominal focus (4/11, cholangitis/cholecystitis in three) and malignancy (3/11). Of the ten previously reported cases of infection due to R. planticola, five involved a monobacterial bacteraemia (Castanheira et al., 2009; Freney et al., 1986; Yokota et al., 2012). Unique to our case is the involvement of this organism in a polymicrobial bacteraemia in the presence of cholangitis and ERCP. This supports the suggestion made by Yokota et al. (2012) that gastrointestinal colonization is a potential source for R. planticola. Fecal colonization with R. planticola (formerly K. planticola) has been previously reported in adults (Toivanen et al., 1999) and rectal and oropharyngeal colonization in neonates (Podschun et al., 1998). In addition, R. planticola has been found to express virulence factors similar to those of K. pneumoniae, suggesting that they may be of similar pathogenicity (Podschun et al., 2000).

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