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Rothia mucilaginosa: a rare cause of peritoneal dialysis-related peritonitis

Ashik Hayat, Pavan Thaneeru

Abstract

We report a peritoneal dialysis-related peritonitis infection with *Rothia mucilaginosa* (*R. mucilaginosa*), a Gram-positive germ belonging to the normal flora of the human oral cavity. Successful treatment was achieved by intraperitoneal administration of cephazolin. This case report illustrates the potential virulence of *R. mucilaginosa* in patients on peritoneal dialysis. We propose to routinely perform specific staining and prolonged culturing techniques for unusual germs such as *R. mucilaginosa* in patients with peritoneal dialysis-related peritonitis

Case report

A 44-year-old Caucasian female with end-stage renal disease (ESRD), secondary to malignant hypertension on continuous cyclic peritoneal dialysis (PD) since October 2011, presented to our emergency department with pain abdomen, nausea and feeling unwell associated with cloudy dialysate drain without any fever.

The peritoneal fluid analysis revealed 1740 white cells/µL with 84% polymorphs and a negative Gram stain. She was treated empirically with cephazolin 1.5 g and ceftazidime 1.5 g intraperitoneally. Her specimen grew *Rothia* (*Stomatococcus*) *mucilaginosa* on enriched medium sensitive to first-generation cephalosporin and resistant to aminoglycosides.

Her ceftazidime was discontinued and she continued on intraperitoneal cephazolin for 2 weeks. She responded well to antibiotics with a progressive fall in PD fluid cell count, her white cell count reduced to 48 cells/µL with 20% polynucleotide and 80% mononucleated cells on the fourth day of treatment.

In the past she had two episodes of relapsing methicillin-resistant *Staphylococcus aureus*-related PD peritonitis needing removal of PD catheter and interim transfer to haemodialysis 1 year back

Discussion

Rothia mucilaginosa (*R. mucilaginosa*), formerly known as *Stomatococcus mucilaginosus*, is an encapsulated Gram-positive, coagulase-negative, encapsulated, non-sporing coccus found in pairs, clusters and tetrads and is considered as normal flora of the mouth and respiratory tract.

R. mucilaginosa colonies are sticky or mucoid; clear to white and adherent to the agar surface. The inability to grow in the presence of 5% NaCl distinguishes *R. mucilaginosa* from the members of the general staphylococcus and micrococcus species.[1,2]

R. mucilaginosa is considered as emerging opportunistic pathogens in patients with chronic immunosuppressive diseases. The bacterium has been implicated in serious infections such as septicaemia, endocarditis, meningitis, pneumonia, osteomyelitis and peritonitis mostly in neutropenic patients.[3–5]

The most common risk factors for infection are indwelling catheter, leukaemia, cancer, cardiac valvular disease, intravenous drug abuse and severe neutropenia. In non catheter-related bacteraemia, the portal of entry of *R. mucilaginosa* is usually the oral mucosa. *R. mucilaginosa* is generally susceptible to penicillin, ampicillin, cefotaxime, imipenem, rifampicin and glycopeptides.

In our patient, the portal of entry remains unclear, direct seeding into the peritoneal cavity via the periluminal route is generally the most common origin. *R. mucilaginosa* is part of the normal flora of the human oral cavity, a haematogenous seeding from the patient's mouth is another possibility, however our patient did not have any recent history of a dental work to definitely incriminate that aetiology.

Our patient has an ESRD with indwelling peritoneal dialysis catheter and previous history of multiple *Staphylococcus aureus*-related PD peritonitis needing catheter removal, we consider her to be at high risk for PD peritonitis related to atypical organisms like *Rothia* There are only two reported cases of PD-associated peritonitis due to *R. mucilaginosa* in the literature.[6–8] Infections with *R. mucilaginosa* are likely to be under-reported since it is not routinely included in the database of automated microbiologic identification systems.

Since a significant number >20% of the patients with PD-related peritonitis are culture negative, it emphasises the fact that special culture techniques should be used to isolate unusual causes of peritonitis, including bacteria fungi and mycoplasma for specific treatment and better outcomes in these unfortunate patient whose survival depends upon the well-functioning peritoneal cavity.[12]

Conclusion

Despite its low virulence, *Rothia* may be emerging as a pathogen of greater importance due to concurrent use of multiple antibiotics in patients with varying levels of immunocompromise. We propose to routinely perform specific staining and prolonged and specific culturing techniques for unusual germs such as *R. mucilaginosa in* patients with peritoneal dialysis-related peritonitis

Author information: Ashik Hayat, Pavan Thaneeru; Department of Medicine and Nephrology, Taranaki Base Hospital, New Plymouth

Correspondence: Dr Ashik Hayat, Department of Medicine and Nephrology, Taranaki Base Hospital, 25 David Street, New Plymouth 4310, New Zealand. Email: ashikhayat@hotmail.com

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