

Incidence and outcomes of gram-negative bacteraemias in haemodialysis patients – 12 year single-centre experience

Dr Fatima Malik¹, Dr Anna Naito¹, Dr Christopher Clegg¹, Dr Lisa Bradwell¹, Dr David Makanjuola¹

¹*Epsom and St Helier University Hospitals NHS Trust, Carshalton, United Kingdom*

Introduction:

Patients on haemodialysis (HD) are at increased risk of contracting infections. Gram-negative bacteraemia in HD patients is associated with early mortality (1). In our HD population, we looked at the incidence and clinical outcomes of gram-negative bacteraemias over 12 years.

Methods:

Data were collected from clinical records and the hospital's microbiology database of all confirmed bacteraemias in HD patients between 2007 and 2018.

Results:

283 episodes of gram-negative bacteraemia occurred in 1361 patients over the study period. 166 (58.7%) were male. The median age was 71 years (range 26-95).

The dialysis population grew from 810 to 1244 patients between 2007 and 2018. In spite of this, the proportion of gram-negative bacteraemias fell significantly between 2007 and 2010 and appears to have plateaued since then (Figure 1).

90 (31.8%) had arteriovenous fistulae (AVF) or grafts, the remainder had dialysis lines in place, of which 41 (21.2%) had dual access (AVF or graft + line), with the AVF or graft not yet in use.

The bacteraemias were deemed to be related to the dialysis access in 89 events (31.4%). Of these, 73 (82.0%) were related to the dialysis lines, 16 (18.0%) were related to AVF or graft. 190 (67.1%) were from other sources, of which the most predominant sources identified were urinary tract 18.4% (n=52), hepatobiliary 7.8% (n=22), chest 7.8% (n=22), gastro-intestinal 6.0% (n=17) and skin/soft tissue in 4.9% (n=14). There was no information on 4 patients (1.5%).

Complications of the bacteraemias included: discitis (6, 2.1%); osteomyelitis (5, 1.8%); endocarditis (2, 0.7%); septic arthritis (2, 0.7%); and death (34, 12.0%). Of the patients with complications, 17 (34.7%) had an AVF or graft; 25 (51.0%) had dialysis lines; and 6 (12.2%) had dual access.

Discussion/Conclusion:

The incidence in gram-negative bacteraemias in our cohort appears to have plateaued, with bacteraemias originating from other sources such as the urinary tract and intra-abdominal accounting for a greater proportion of gram-negative bacteraemias in our cohort - a trend reflected in other similar observational studies in HD populations (2, 3).

Our data also show that dialysis lines remain a significant risk factor for bacteraemia, lending further weight to the importance of establishing early definitive vascular access in these patients. The increased incidence of pathogens from non-access related sources however, highlights the fact that our HD populations are exposed to both community and healthcare associated infections, and ongoing surveillance and strategies to reduce the burden of blood-stream infections in this at-risk cohort remains imperative not just in the dialysis centres, but also in the community.