Incidence, Management and Outcomes of the First Cfr-Mediated Linezolid-Resistant *Staphylococcus Epidermidis* Outbreak in a Tertiary Referral Centre in the Republic of Ireland

O'Connor, C.,[1]
Powell, J.,[2]
Finnegan, C.,[2]
O'Gorman, A.,[3]
Barrett, S.,[4]
Hopkins, K.L.,[5]
Pichon, B.,[5]
Hill, R.,[5]
Power, L.,[1]
Woodford, N.,[5]
Coffey, J.C.,[3]
Kearns, A.,[5]
O'Connell, N.H.,[1]
Dunne, C.P.[3]
Department of Clinical Microbiology, University Hospital Limerick[1]
Department of Infection Prevention and Control, University Hospital Limerick[2]
Centre for Interventions in Infection, Inflammation and Immunity, Graduate Entry Medical School, University of Limerick[3]
Department of Pharmacy, University Hospital Limerick[4]
Antimicrobial Resistance and Healthcare Associated Infections Reference Unit, Public Health England, London, UK[5]

ABSTRACT

The objective of this study is to report the first Irish outbreak of cfr-mediated linezolid-resistant *Staphylococcus epidermidis.*

Linezolid-resistant S. epidermidis isolated at University Hospital Limerick from four blood cultures, one wound and four screening swabs (from nine patients) between April and June 2013 were characterized by pulsed-field gel electrophoresis (PFGE), multi-locus sequence typing (mlst) and staphylococcal cassette chromosome (SCCmec) typing. Antibiotic susceptibilities were determined according to the guidelines of the British Society for Antimicrobial Chemotherapy. The outbreak was controlled through prohibiting prescription and use of linezolid, adherence to infection prevention and control practices, enhanced environmental cleaning, isolation of affected patients, and hospital-wide education prog-rammes.

PFGE showed that all nine isolates represented a single clonal strain. MLST showed that they belonged to ST2, and SCCmec typing showed that they encoded a variant of sccmeciii. All nine isolates were cfr positive, and eight isolates were positive for the G2576T 23s rRNA mutation commonly associated with linezolid resistance. Isolates exhibited multiple antibiotic resistances (i.e. linezolid, gentamicin, methicillin, clindamycin, ciprofloxacin, fusidic acid and rifampicin). The adopted infection prevention intervention was effective, and the outbreak was limited to the affected intensive care unit.

This is the first documented outbreak of cfr-mediated linezolid-resistant S. epidermidis in the republic of Ireland. Despite this, and due to existing outbreak management protocols, the responsible micro-organism and source were identified efficiently. However, it became apparent that staff knowledge of antimicrobial susceptibilities and appropriate hygiene practices were suboptimal at the time of the outbreak, and that educational interventions (and re-enforcement) are necessary to avoid occurrence of antimicrobial resistance and outbreaks such as reported here.

SOURCE

J Hosp Infect. 2015 Jan 13.pii:SO195-6701(15)00031-6. doi:10.1016/j.jhin.2014.12.013.
[Epub ahead of print]