Clinical and Microbiological Characteristics of Colistin-Resistant Enterobacteriaceae at a Large Tertiary Care Center in Michigan

John P Mills, MD; Oryan Henig, MD; Twisha Patel, PharmD; Laraine Washer, MD; Michael Bachman, MD, PhD; Carey Dombecki MPH, CIC; Keith S Kaye, MD, MPH

BACKGROUND

Plasmid-mediated colistin resistance (mcr-1) has raised concerns regarding widespread dissemination of polymyxin resistance. The epidemiology of colistin resistance among Enterobacteriaceae was evaluated at Michigan Medicine.

METHODS

Data pertaining to patients who had clinical Enterobacteriaceae isolates with a colistin MIC ≥ 4 µg/L between 1/2016 and 3/2017 were collected. All clinical isolates of Enterobacteriaceae were routinely tested for colistin susceptibility by broth microdilution (TREK Sensititre) during the study period. Resistant isolates were confirmed with repeat testing. Species with intrinsic colistin resistance were excluded. Prior healthcare exposure was defined as a stay for ≥ 48 hours in a hospital or long-term care facility within 90 days prior to culture. Multidrug resistance was defined as resistance to ≥ 3 classes of antibiotics. Antibiotic exposure was captured for 90 days prior to culture. Select isolates were tested for the mcr-1 gene by PCR.

RESULTS

0.75% of all tested Enterobacteriaceae isolates had an MIC ≥ 4, indicating a low but significant frequency of resistance. The majority of patients acquired colistin-resistant Enterobacteriaceae in the community. Isolates were susceptible to most non-polymyxin antibiotics. mcr-1 was detected in 3 isolates; all were travel-related.

REFERENCES
