Characteristics and Predictive Factors for Primary Multidrug-Resistant Gram-Negative Infections Following Deployment-Related Trauma

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Abstract

Background: Multidrug-resistant (MDR) Gram-negative (GN) infections (MDRGNIs) are an increasing problem in the deployed military population. The purpose of this study was to assess characteristics and predictive factors associated with primary MDRGNI and the role of antibiotic exposure in MDRGNI development.

Methods: This was a retrospective cohort study of trauma admissions to 3 Level 1 trauma centers in the United States (2009-2014). MDRGNI was defined as any primary Gram-negative bacteria associated with prior MDRGN colonization as well as escalating antibiotic class, expanded coverage combination regimens, and duration of exposure. As the largest cohort analysis of trauma patients, these findings inform etiologic agents were time to MDRGNI event was 7 days post-trauma with 75% of MDRGNIs diagnosed by 11 days post-trauma. MDRGNI identified increasing risk with combinations of 1st generation cephalosporin and fluoroquinolone (FQ) (OR: 2.0, 95% CI: 1.5, 2.6), 1st generation cephalosporin and tetracycline (OR: 2.1, 95% CI: 1.6, 2.7), but not tetracycline and carbapenem (OR: 1.2, 95% CI: 0.8, 1.8). Increased risk was also associated with coagulase-negative Staphylococcus (OR: 2.0, 95% CI: 1.3, 3.0) and Klebsiella spp. (OR: 2.0, 95% CI: 1.3, 3.2). Multivariate: Antibiotics ≥2 Days Antibiotics ≥5 Days

Results: Of 2,699 TIDOS participants, 913 experienced MDRGNIs (26.8% experienced MDRGNI) with incidence 9.1% (95% CI: 8.0-10.2). Characteristics and Predictive Factors for Primary Multidrug-Resistant Gram-Negative Infections

Results (cont.)

Conclusions: The finding that a high proportion of patients in our study had a MDRGNI as their first infection. Increased risk was associated with coagulase-negative Staphylococcus (OR: 2.0, 95% CI: 1.3, 3.0) and Klebsiella spp. (OR: 2.0, 95% CI: 1.3, 3.2). Multivariate: Antibiotics ≥2 Days Antibiotics ≥5 Days

Acknowledgments

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