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Short Communication

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Antimicrobial resistance & healthcare-associated infections (ARHAI) in the era of pan-drug-resistant organisms (PANDRO)- Suleiman Al-Obeid- Security Forces Hospital

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Aim:

Infections caused by bacteria resistant to most available antibiotics, called multi-drug resistant organisms (MDRO), have been increasing worldwide during the last decade. Our goal is to provide information about the epidemiology of MDRO in our hospital in the Kingdom of Saudi Arabia, and to provide guidance on how to control the spread of these bacteria inside and outside of the hospital. Our focus is on bacteria most frequently found in hospitalized patients: methicillin resistant Staphylococcus aureus (MRSA), heterogeneous vancomycin-resistant Staphylococcus aureus (hVISA), vancomycin-resistant Enterococci (VRE) and resistant Enterobacteriacea (for example Escherichia coli & Klebsiella pneumoniae) and multi-drug resistant Pseudomonas aeruginosa and Acinetobacter baumannii.

Findings:

A total of 29104 isolates of Gram-negative bacteria were obtained from patients' specimens including blood, sputum, tracheal aspirate, lavage, urine and wound. Patients were sampled in 2006 (7024), 2009 (6657), 2012 (8003) and 2014 (7420). The most frequently isolated organisms were E. coli (40% of isolates), P. aeruginosa (21%), K. pneumoniae (21%) and A. baumannii (12%). Between 2006 and 2014, susceptibilities of A. baumannii & P. aeruginosa to meropenem and imipenem decreased from 81, 64 and 93, 86% to 6, 5 and 48, 31% respectively. Between 2012 and 2014, E. coli and K. pneumoniae that produce extended-spectrum beta-lactamases (ESBLs) increased from 25% and 19% to 40% and 32% respectively. The first outbreak by ESBL-producing K. pneumoniae in our NICU was in 2006, the resistant was carried by a ca.100-kb plasmid encoding beta-lactamase SHV-12 ESBL in Riyadh, KSA. VRE and MRSA were increased from 5 and 33% in 2006 to 44.3 and 40% in 2014 respectively. The first strain of hVISA was isolated in our hospital in 2008 and was then characterized. From 2012, 90% of A. baumannii isolated in the kingdom are extensively drug resistant. Data from our IC surveillance reports an increase of MDRO between 2006 and 2014. In contrast, the numbers of healthcare-associated infections caused by Gram-negative bacteria such as E. coli, K. pneumoniae, P. aeruginosa and A. baumannii, decreased significantly between 2013 and 2014. Vancomycin resistant Enterococcus faecium (VRE) have now reached a level that exceeds MRSA, having increased from 5% in 2006 to 44.3% in 2014. Between 2006 and 2014, the number of nosocomial infection varied between 400 and 500 cases per year, but we observed that the number of MDRO isolates increased.

Result:

To reduce the number of infections and their associated morbidity and mortality, successful administrative and scientific leadership is needed, along with financial and human resources commitment. Accurate and timely laboratory identification of bacteria with multidrug resistance is crucial for effective infection control measures in hospitals. Hospitals, intensive-care units, and long-term care facilities need to develop and implement infection control policies for MDRO. These policies must be followed closely by patients, healthcare workers, administrators and visitors. Control can only be achieved if a national strategy is developed and adhered to by all healthcare facilities.

Note : This research was partly presented at 4th World Congress and Expo on Applied Microbiology during September 19-21, 2016 in Las Vegas, USA.

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