Sensitivity of Common Organisms in Implant Related Infection and Choice of Antibiotics. A Clinical Study

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INTRODUCTION:
Orthopaedic implants are susceptible to infection and the outcomes may be catastrophic (1). Early detection is needed to start treatment accordingly without any delay. The common practice in our centre is to start intravenous cefuroxime empirically. The aim of this study is to determine the sensitivity of common organisms isolated from bone cultures in implant-related infections to principal lines of antibiotic.

MATERIALS & METHODS:
We liaised with the infectious disease and microbiology department for the data collection. All the positive bone cultures sent during a period of 16 months (February 2021 – May 2022) were traced. From the above list, we filtered patients who were diagnosed with implant related infection based on their case notes. Inclusion criteria: open fracture, infection within three months from internal fixation, bone culture must originate from the same site as the implant and first episode of implant-related infection.

RESULTS:
Out of 168 patients, 13 patients met the criteria and 16 organisms were isolated. Most common organism was Pseudomonas aeruginosa (4). Followed by Staphylococcus aureus (3 including 1 MSSA & 1 MRSA), Enterococcus faecalis (2), Enterobacter cloacae (2 including 1 ESBL), Escherichia coli ESBL (2), Klebsiella pneumoniae AmpC (1), Escherichia hermanii (1) and Acinetobacter baumanii MRO (1). The sensitivity results are as followed (Figure 1):
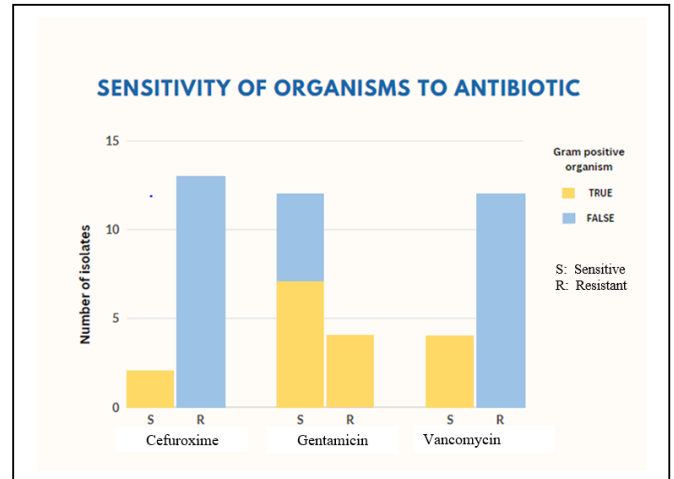

Figure 1.

DISCUSSIONS:
The results showed that majority are more sensitive to gentamicin and vancomycin compared to cefuroxime. Overall gentamicin stood superior by providing broader coverage in targeting Gram positive as well as Gram negative organisms. Vancomycin slightly edges cefuroxime in targeting Gram positive organisms.

CONCLUSION:
This study suggests Gentamicin as first line empirical antibiotic in implant-related infection. However patient's renal profile and allergy status must be taken into consideration. A bigger sample size and multicenter study would provide more strength to our study.

REFERENCE:
1. Zimmerli, W. Clinical presentation and treatment of orthopaedic implant-associated infection (Review). *J Intern Med* 2014; doi: 10.1111/joim.12233 276: 111– 119.