Response to Dr Jolobe: ‘Optimizing diagnostic strategies in emphysematous osteomyelitis’

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Dear Editor,

We appreciated the letter from Dr. Jolobe and his comments about our article entitled ‘A Patient with Neutropenic Fever and Intraosseous Gas’.¹ We agree with the introduction of molecular diagnostic techniques for sepsis and bloodstream infection, the PCR-based techniques have demonstrated faster turnaround time and useful in the case of polymicrobial infection² and better diagnostic yield in osteomyelitis³ however, limitations such as variability of results between different laboratories with the same PCR assay, the possibility of identification of contaminants, poor sensitivities (68%, 95% CI [0.63–0.73]), and a lack of studies about hospital costs.²,⁴ Aside from PCR based assays, it is MALDI-TOF MS an appropriate alternative. A decision-analytic model that compared several modalities with or without an antimicrobial stewardship program (ASP) showed that MALDI-TOF with an ASP was the most cost-effective strategy, in addition the probability of being cost-effective with molecular rapid diagnostic tests and ASP was 80% vs. 41% without it latter.⁵

Another issue is the increasing prevalence of multidrug resistant pathogens with different mechanisms of resistance among geographical areas, therefore the implementation of rapid diagnostic testing should be accompanied for rapid detection of antibiotic resistance.⁶ The actual costs of some of these assays could be substantial,⁶ added to laboratory requirements and trained personnel, may be limitations in low and middle income countries.

The empiric antibiotic therapy for neutropenic fever,⁷ vertebral osteomyelitis⁸ and sepsis and septic shock,⁹ such as carbapenems and glycopeptides cover the reported agents of hematogenous osteomyelitis (e.g. Escherichia coli, Staphylococcus Bacteroides fragilis, Clostridium septicum, Fusobacterium necrophorum),¹⁰ however, the molecular diagnostic techniques are an excellent complement for reducing turnaround times and days of broad spectrum antibiotic therapy, however more cost-effective studies are needed before its widespread implementation. Meanwhile optimization of blood cultures diagnostic algorithms and establishment of ASP are mandatory, mainly in low and middle income countries.¹¹

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References


