Paper #32

Antibiotic Susceptibility of Organisms Recovered in Culture from Patients with Acute Prosthetic Joint Infection Following Primary Total Knee Arthroplasty

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Introduction: Periprosthetic infection (PJI) after primary total knee arthroplasty (TKA) affects 1-2% of cases. Local prophylactic antibiotics, including tobramycin or gentamicin mixed in polymethylmethacrylate bone cement and vancomycin powder, are used despite mixed evidence for efficacy. Here, we report the antibiotic susceptibility of organisms recovered in culture from acute PJI after primary TKA to gentamicin, tobramycin and vancomycin.

Methods: Using a retrospective database of all primary TKA performed at a single institution between January 1, 2014 and July 1, 2018, we identified 18 cases of acute PJI after primary TKA as defined by the Musculoskeletal Infection Society 2011 guidelines as less than 3 months from index surgery. Cultures were obtained intraoperatively at the time of revision. Organisms from positive cultures underwent MIC testing to gentamicin, tobramycin and vancomycin using a gradient diffusion method (ETEST). MIC breakpoints for susceptibility were based on Clinical and Laboratory Standards Institute definitions.

Results: 18 cases of PJI after TKA were identified, including 4 polymicrobial infections (22.2%). Average time to revision was 38 days (range: 6-84 days). 34.8% of bacterial isolates were resistant to gentamicin, 39.1% were resistant to tobramycin and 17.4% were resistant to vancomycin. Of the 8 bacterial isolates resistant to gentamicin, 7 (87.5%) were susceptible tobramycin. Of the 9 bacterial isolates resistant to tobramycin, (88.9%) were susceptible to vancomycin. One bacterial isolate, a fusobacterium nucleatum from a polymicrobial infection was resistant to gentamicin, tobramycin and vancomycin.

Conclusions: Over one-third of bacteria causing acute PJI after primary TKA were resistant to aminoglycosides pre-mixed in commercially available bone cements. All but one of the bacteria resistant to gentamicin and tobramycin were susceptible to vancomycin. The addition of vancomycin to bone cement or as powder in the surgical field can expand antibiotic coverage to include most organisms responsible for acute PJI after TKA.