QUESTION 26: What is the role of prophylactic antibiotics for invasive procedures (dental, gastrointestinal (GI), urologic, etc.) in the presence of an arthroplasty to prevent subsequent periprosthetic joint infection (PJI)?

RECOMMENDATION: There is no role for routine prophylactic antibiotic administration prior to dental or genitourinary (GU) procedures. There is limited evidence that has shown certain GI procedures may be associated with a risk of subsequent PJI.

LEVEL OF EVIDENCE: Limited

DELEGATE VOTE: Agree: 64%, Disagree: 28%, Abstain: 8% (Super Majority, Weak Consensus)

RATIONALE

Dental Procedures

Transient bacteremia has been shown to occur following dental procedures [1,2]. There is a theoretical risk of hematogenous seeding of the prosthetic joint following transient bacteremia, however this is not necessarily borne out in the literature [3,4]. Further, there are two studies that show no difference in the rate of PJI between those patients who received antibiotic prophylaxis and those that did not. In a prospective case-control study of 339 patients, Berbari et al. showed that there was no statistically significant reduction in the rates of PJI in patients who received antibiotics prophylaxis [5]. In a large retrospective cohort study, Kao et al. identified 57,066 patients who had undergone dental treatment following total joint arthroplasty (TJA) and matched this cohort to patients who had undergone TJA and had not undergone dental procedures. The authors found no significant difference in the rate of PJI between the two groups and, further, there was no difference in the rate of PJI for those who received antibiotics prophylaxis and those who did not [6]. With this evidence in mind, there is currently no evidence for routine antibiotic use for prophylaxis against PJI in patients undergoing dental procedures.

Genitourinary Procedures

GU procedures (including but not limited to) transurethral resection of the prostate (TURP), cystoscopy, urethral dilation, ureteral stenting and transrectal prostatic biopsy, have been shown to be associated with transient bacteremia [7–13] and there is a theoretical risk of seeding of the prosthetic joint via hematogenous spread. The literature regarding the subsequent development of PJI following GU procedures is limited. A number of case reports have documented PJI following TURP [14][15]. In a prospective, case-controlled study, Gupta et al. showed that there was no increased risk of PJI for patients undergoing GU procedures. They also noted that prophylactic antibiotics did not lower the rate of PJI, although it should be noted that a low percentage of patients in both the case and control groups received prophylactic antibiotics (1% and 2%, respectively) [16].

Gastrointestinal Procedures

GI procedures such as gastrointestinal endoscopy, colonoscopy and sigmoidoscopy have been shown to produce transient bacteremia [17–19], most commonly in patients who are in an immunocompromised state [20,21]. There are several small-scale studies and case reports that have shown an association with PJI in patients following invasive gastrointestinal procedures [22–25]. Currently, there is only one single-center, case-control study which showed that esophago-gastro-duodenoscopy with biopsy increased the risk of developing PJI (odds ratio (OR): 4, 95% confidence interval (CI) 1.5 to 10) [26]. While prophylactic antibiotics may be warranted in this situation and in high-risk patients, further investigation is needed to determine whether prophylactic antibiotics are necessary in all patients undergoing invasive gastrointestinal procedures, and whether their usage will successfully decrease the risk of PJI.

REFERENCES