Letter by Khan et al Regarding Article “Efficacy of Antibiotic Prophylaxis Before the Implantation of Pacemakers and Cardioverter-Defibrillators: Results of a Large, Prospective, Randomized, Double-Blinded, Placebo-Controlled Trial”

To the Editor:

We read with interest the recent article by Oliveira et al demonstrating that a single intravenous dose of 1 g cefazolin at the time of implantation significantly reduces infectious complications in patients undergoing pacemaker or cardioverter-defibrillator implantation. This reinforces the conclusion from the meta-analysis by Da Costa et al that prophylactic systemic antibiotics should be given at the time of implantation. We agree with this and recently performed a questionnaire-based observational study of all 121 adult National Health Service hospital units in England implanting permanent pacemakers. We were encouraged to find that 56 of the 61 respondents (92%) used prophylactic systemic antibiotics at implantation.

Oliveira et al used the first-generation cephalosporin, cefazolin. Infection developed in 13 patients in their study. <i>Staphylococcus aureus</i> was isolated in 8 and coagulase-negative <i>Staphylococcus</i> in 5 (<i>Staphylococcus epidermis</i>, <i>Staphylococcus simulans</i>). This reafirms conclusions from previous studies that <i>Staphylococcus</i> (especially <i>S aureus</i>) is the key organism that must be covered by prophylactic antibiotics in cardiac device implantation.\(^1,2\)

However, the need for good activity against <i>S aureus</i> should be balanced against the risk of antibiotic-associated infections, especially the potentially life-threatening <i>Clostridium difficile</i>-associated diarrhea (CDAD). This has become an increasingly prevalent and worrying problem, particularly in the United Kingdom. Indeed, cephalosporins are among the most closely implicated antibiotics in the development of CDAD. Narrow-spectrum penicillins such as flucloxacillin and aminoglycosides such as gentamicin rarely cause CDAD.\(^3\) Even a single dose of cefazolin can cause CDAD.\(^4\) Oliveira et al did not assess for evidence of antibiotic-associated diarrhea during their 6-month follow-up period. It would have been useful to know whether this had occurred in any subjects.

Excessively broad-spectrum antibiotics or those known to be strongly linked with the development of CDAD should be avoided where possible. It could be argued that since <i>S aureus</i> is the main organism involved in pacemaker-associated infections and flucloxacillin provides excellent cover against this with a very low incidence of CDAD, that prophylaxis with flucloxacillin alone is sufficient. We accept that 5 of the 13 infections in their study were due to coagulase-negative <i>Staphylococci</i>, which are often flucloxacillin resistant. Gentamicin has good activity against coagulase-negative <i>Staphylococci</i>.\(^3\) Could the addition of intrapocket gentamicin as already used by some operators to systemic administration of flucloxacillin provide effective anti-<i>Staphylococcal</i> prophylaxis with a potentially significantly lower risk of CDAD?

Studies are needed comparing prophylactic antibiotic regimes at the time of implantation and their success and complication rates, including CDAD. In addition, further study into intrapocket antibiotic use and the use of systemic prophylactic antibiotics after implantation is required. These practices are now commonplace but supported by very little evidence.

Disclosures

None.

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References

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