ABSTRACT

BACKGROUND: Use of antibiotic-impregnated materials, including antibiotic beads, cement or impregnated spacers, in the treatment of prosthetic joint infections (PJIs) is almost universal. These materials require hand mixing of cement and antibiotics at the time of implantation, so drug(s) and dosages vary greatly. Although these materials are generally considered to be safe, there are no studies that specifically address safety and these devices have not been evaluated or approved by FDA. Despite a few anecdotal reports of toxicity, the actual frequency of adverse events resulting from these materials is unknown.

OBJECTIVE: To determine the frequency of adverse events associated with use of antibiotic-impregnated materials in the treatment of PJIs as reported by a national network of infectious diseases consultants (IDCs).

METHODS: 994 IDCs who are members of the Emerging Infections Network (EIN) were surveyed regarding their practices in the diagnosis and therapy of PJIs. Members were also queried about any observations of adverse effects associated with the use of antibiotic-impregnated material to treat PJIs.

RESULTS: 360 of the 545 respondents (65% overall response rate) stated they were never or rarely asked for input regarding use of antibiotic-impregnated materials. The respondents’ reports of toxicity related to antibiotic-impregnated material were significant, and the safety of these materials needs to be further studied. Development of a registry tracking the safety of these materials should be investigated.

INTRODUCTION

• The number of primary joint replacements (hips and knees) has increased steadily in recent years and is projected to increase further by the year 2030 (hips 174, knees 873%).

• Although the infection rate after primary joint replacement is low (around 1% for both hips and knees), the demand for revision procedures is projected to double for hips and knees by the year 2026 and 2015, respectively.

• The burden of prosthetic joint infections will likely increase as both the number of primary joint replacements and revisions increase.

• Hand mixing of antibiotic and cement (or other materials used) is required at the time of surgery as no commercial products are available. The drug(s) and dosages chosen may vary by institution and surgeon.

• Although generally considered a safe practice, there are anecdotal reports of toxicity from the use of these materials.

• With increasing numbers of prosthetic joint revisions, complications from use of antibiotic-impregnated materials may also increase.

• The objective of the survey was to determine the frequency of adverse events associated with the use of antibiotic-impregnated materials in the treatment of prosthetic joint infections as reported by a national network of infectious disease consultants.

RESULTS

• Overall response rate: 545 of 994 (54.8%) of infectious disease consultants responded. Not all respondents answered all questions, so totals for individual questions vary.

• The most common time points infectious disease consultant were usually asked to be involved early in the care with prosthetic joint infections were at the time of diagnosis (259, 59%) or around the time of surgery (114, 27%).

• Majority of respondents (360, 79%) stated they were never or rarely asked for input regarding use of antibiotic-impregnated materials.

TABLE 2 Breakdown of adverse events noted by infectious disease consultants (49, 11%).

CONCLUSIONS

• Advise from infectious diseases consultants is rarely sought for selection or dose of antibiotics used in antibiotic-impregnated materials.

• The respondents’ reports of toxicity related to antibiotic-impregnated material were significant. Nephrotoxicity related to aminoglycoside use and skin reactions related to vancomycin or cephalosporin use were the most common adverse events.

• The safety of these materials needs to be further studied. Development of a registry tracking the safety of these materials should be investigated.