Are Antibiotics Necessary in Pediatric Upper Extremity Surgery?

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INTRODUCTION:

Administration of antibiotic prophylaxis has been extensively analyzed in adult upper extremity surgery, but data in the pediatric population is still limited. There is no consensus on whether antibiotic prophylaxis is necessary in clean, pediatric hand and upper extremity cases. We hypothesize that antibiotic prophylaxis is not necessary, and there is no difference in postoperative surgical site infection rates regardless of preoperative antibiotic administration.

METHODS:

A retrospective cohort analysis was performed on all pediatric upper extremity surgical cases performed at a single institution between November 2021 and November 2023. All clean, soft tissue and hardware implantation cases were included. Exclusion criteria included patients over the age of 18, administration of antibiotics in the immediate postoperative period, and those with less than 30 days of follow-up. Patient demographic factors and operative details were collected including age, sex, laterality, medical comorbidities calculated as Pediatric Comorbidity Index, administration of perioperative antibiotics, hardware type, and length of procedure. Primary outcome measures were diagnosis of surgical site infection by 14 days and 30 days. Secondary outcomes included management with antibiotic treatment, operative washout, or hardware removal if diagnosed with an infection. Categorical variables were compared using Fisher's exact test, and continuous variables were compared using Wilcoxon rank-sum test. Significance was defined by p-value < 0.05.

RESULTS: A total of 338 patients were included for analysis – 133 received antibiotic prophylaxis and 205 did not. The two groups were similar in terms of demographic factors and comorbidities. Overall postoperative infection rate was very low at 1.2%, and there was no difference in infection rates between the group who received antibiotic prophylaxis and the group who did not. Infection rate in the antibiotic prophylaxis group was 0.8% and in the no antibiotics group was 1.5%. Antibiotic prophylaxis was significantly more likely to be administered in hardware cases versus soft-tissue cases (p-value <0.001). Sub-group analysis showed that implantation of hardware was not associated with an increased risk of infection, and again there was no difference in infection rates with or without antibiotic prophylaxis in hardware cases.

DISCUSSION AND CONCLUSION: Our preliminary findings demonstrate that antibiotic prophylaxis is not necessary in pediatric upper extremity surgical cases even when implantation of hardware is involved. Further prospective studies evaluating the need for antibiotic prophylaxis in pediatric hand and upper extremity surgery should be advocated for.