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PROSPECTIVE MULTICENTER SURVEILLANCE TO IDENTIFY RISK FACTORS FOR SURGICAL SITE INFECTION AFTER POSTERIOR CERVICAL SPINE SURGERY IN ADULTS

Introduction/Aim

Surgical site infection (SSI) is a serious complication of spinal surgery. Accurate identification of risk factors is essential for developing strategies to avoid these devastating infections. The purpose of this study was to identify independent risk factors for SSI among adult patients undergoing posterior cervical spine surgery.

Materials and Methods

We conducted a prospective surveillance study of SSI after posterior cervical spine surgery in adult patients from July 2010 to June 2013 at 12 Japanese hospitals. Detailed preoperative and operative patient characteristics were recorded using a standardized data collection format. Identification of SSI was based on the definition from the Centers for Disease Control and Prevention. Data were analyzed using univariate and multivariate logistic regression analysis with $P < 0.05$ set as the level of significance.

Results

We enrolled 1290 consecutive adult patients, of which 23 (1.8%) developed SSI (6 superficial and 17 deep SSI). Significant risk factors for deep SSIs identified by univariate analysis included diabetes with insulin use, rheumatoid arthritis, grafting with an iliac crest bone, operative time over 4 h, posterior instrumentation, operations using fluoroscopy, and occipito-spinal fusion surgery. Age, sex, body mass index, American Society of Anesthesiologists score, hemodialysis, smoking, intraoperative blood loss, dural tears, and use of bio-clean rooms were not significant risk factors. Multivariate logistic regression analysis indicated three independent risk factors. Diabetes with insulin use was a significant independent patient-related risk factor ($P = 0.015$; odds ratio [OR] = 4.4, 95% confidence interval [CI]: 1.3–14.7), whereas an operating time over 4 hours ($P = 0.003$; OR = 4.3, 95%CI: 1.6–11.3), and occipito-spinal fusion surgery ($P < 0.001$; OR = 8.4, 95%CI: 3.0–23.1) were surgery-related independent risk factors.

Discussion

There was a strong association between occipito-spinal fusion and postoperative SSI. There is little evidence in the literature to suggest that the occipito-spinal fusion procedure is related to SSI risk. Future research should focus on this newly-discovered factor for SSI in the cervical spine.

Conclusions

We identified three independent risk factors for SSI which may be used for developing protocols to decrease the risk of SSI in cervical spine surgery.