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Risk factors and surgical site infection rates related to craniotomy in a tertiary care university hospital. A prospective surveillance programme.

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INTRODUCTION

Surgical site infection (SSI) after neurosurgery, usually results in rehospitalization, reinterventions and frequently determining long-lasting consequences to patients. They are caused specially by normal skin flora such as *Staphylococcus aureus,* coagulase-negative *Staphylococcus* or *Propionibacterium acnes*.

SSI rates reported in the literature vary from 1-8% with the highest rates published in European series. However, these data has been mostly obtained through studies with a retrospective design and some of them included mix-cases such as cranial and spinal procedures. To a better knowledge of this complication, prospective and standardized surveillance is required.

OBJETIVE

To describe risk factors and surgical site infection rates (SSI) after craniotomy at Bellvitge University Hospital, given the limited information related to this issue.

MATERIAL AND METHODS

A surveillance of SSI after craniotomy was performed in a 700-bed tertiary care university teaching hospital in Barcelona area, Spain. The study included all patients admitted for elective or urgent craniotomy from October 2012 to September 2013. Data were prospectively collected in a standardised form also used by the infection control team for doing surveillance of all type of surgeries in the hospital. All craniotomies were followed for 30 days after surgery or 1 year if an implant was inserted. Follow up was performed using patient charts review, checking re-admission and emergency visits, reviewing microbiological data and phone calls. The latter was especially used in patients followed for 1 year. SSI was defined according to definitions by the Centers for Disease Control and Prevention (CDC). Prosthetic implants included plates and screws for cranial osteosynthesis. The Chi-squared or the Fisher exact tests were used to compare categorical data and the *t*- Student or Mann-Whitney *U*-test for continuous data as appropriate.

CONCLUSIONS

The implementation of a SSI surveillance in neurosurgery allowed us to determine SSI rates associated to craniotomy. These rates widely varied depending on the reason for surgery. The analysis did not allow the detection of differences on risk factors. The causative bacteria were mainly, *Propionibacterium* spp and coagulase-negative S*taphylococcus*.

These results have let to create a multidisciplinary working team for developing measures for improving prevention.

RESULTS

Craniotomy was performed in 217 patients. One hundred and fifty-three (70.5%) underwent an elective surgery and 64 (29.5%) urgent

Table 1. Comparison between patients with and without SSI.

	No SSI N=195	SSI N=22	p
Age, y (mean +SD)	52±14	52±15	NS
Sex (M/F)	91%/89%	9%/11%	NS
Implant (yes/no)	90%/86%	10%/14%	NS
Length of surgery (')	240±105	214±93	NS
ASA score >II	34%	45%	NS
NISS >0	68%	76%	NS

SSI rate= 22/217=10.1%
Organ/space= 17/217 = 7.8%
Deep incisional= 5/217= 2.3%

Figure 1

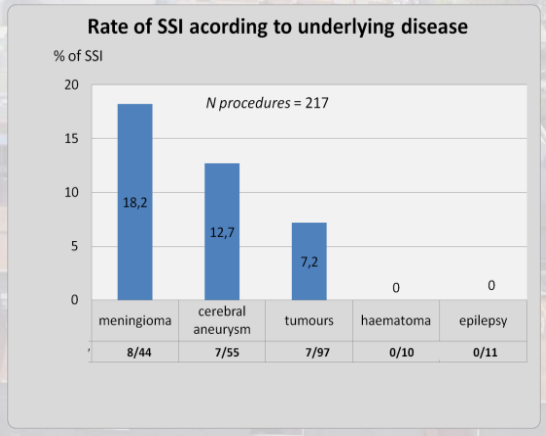
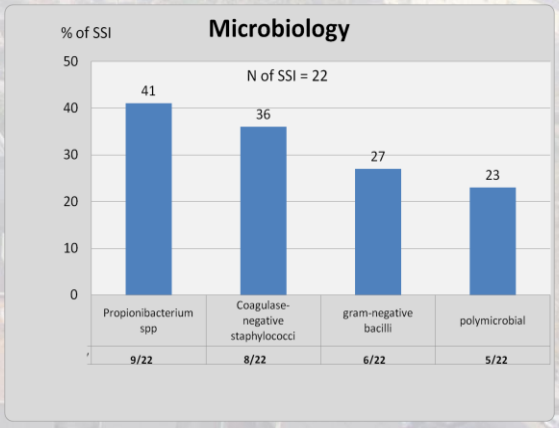


Figure 2



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