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Session: P-42. HAI: Surgical Site Infections

Background. This research represents an experiment on surgical site infection (SSI) in patients undergoing knee arthroplasty surgery procedures in hospitals in Belo Horizonte, between July 2016 and June 2018. The objective is to statistically evaluate such incidences and enable a study of the prediction power of SSI of pattern recognition algorithms, in this case the Multilayer Perceptron (MLP).

Methods. Data were collected on SSI in five hospitals. The Hospital Infection Control Committees (CCIH) of the hospitals involved collected all data used in the analysis during their routine SSI surveillance procedures and sent the information to the Nosocomial Infection Study Project (NOIS). Three procedures were performed: a treatment of the database collected for use of intact samples; a statistical analysis on the profile of the hospitals collected and; an assessment of the predictive power of five types of MLP (Backpropagation Standard, Momentum, Resilient Propagation, Weight Decay, and Quick Propagation) for SSI prediction. MLPs were tested with 3, 5, 7, and 10 hidden layer neurons and a database split for the resampling process (65% and 75% for testing, 35% and 25% for validation). They were compared by measuring AUC (Area Under the Curve - ranging from 0 to 1) presented for each of the configurations.

Results. From the 1438 data collected, 390 records were usable and it was verified: the average age of the patients who underwent this surgical procedure was 70 (ranging from 29 to 92), average surgery time was 171 minutes (between 50 and 480), 47% presented a hospital contamination, 1% SSI and no deaths. During the MLP experiments, due to the low number of SSI cases, the prediction rate for this specific surgery was 0.5.

Conclusion. Despite the large noise index of the database, it was possible to have a relevant sampling to evaluate the profile of hospitals in Belo Horizonte. However, for the predictive process, despite some results equal to 0.5, the database demands more samples of SSI cases, as only 1% of positive samples generated an unbalance of the database. To optimize data collection and enable other hospitals to use the SSI prediction tool (available in www.sacihweb.com), two mobile application were developed: one for monitoring the patient in the hospital and the other for monitoring after hospital discharge.

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902. Selection of Antibiotics for Prophylaxis of Left Ventricular Assist Device Surgical Infections: More is Not More

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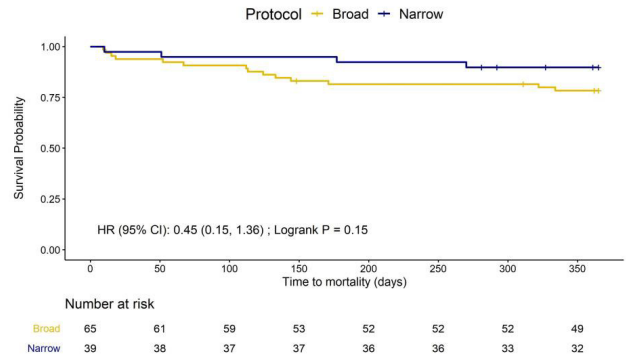
Background. Surgical site infections (SSI) for implantation of left ventricular assist devices (LVADs) are associated with high mortality. Updated guidance from the International Society for Heart and Lung Transplant recommends that SSI prophylaxis regimens target *Staphylococcus* spp and recommend against broad regimens targeting gram-negatives and fungi. The purpose of this study was to compare outcomes between patients that received broad or narrow antimicrobial prophylaxis regimens after a change in institutional protocol.

Methods. This single center retrospective study included adult patients who underwent LVAD implantation between January 2015 and September 2019. Patients were excluded if post-surgical care was managed at an outside facility, were treated for an active infection at the time of implantation, or underwent re-implantation within 90 days. The narrow spectrum group consisted of patients that received cefazolin, vancomycin or both, while the broad spectrum group consisted of patients that received an anti-pseudomonal beta-lactam plus vancomycin ± other antibiotics. Data was compared using t-test or Wilcoxon rank sum test, Chi-Square test, or Fisher's Exact. Cox-proportional hazards models and log-rank tests were used for survival analysis.

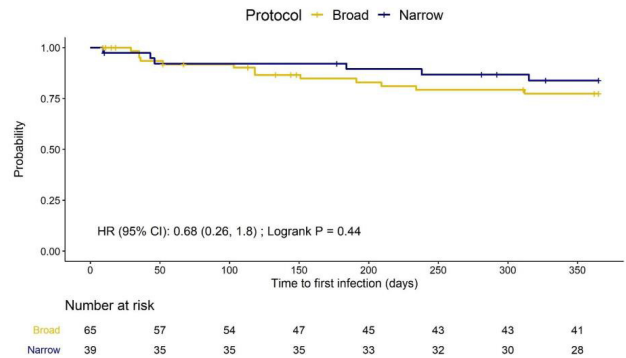
Results. A total of 104 patients were included, with 39 and 65 patients receiving narrow and broad spectrum prophylaxis, respectively. There was no difference in the primary outcome of SSI rate between the narrow and broad antimicrobial prophylaxis groups at 30 days (7.7% vs 7.7%, p=1.00) and 1 year (18.0% vs 18.5%, p=1.00) respectively. Secondary outcomes of time to mortality (HR 0.45, 95% CI 0.15-1.36, logrank P=0.15), time to first infection (HR 0.68, 95% CI 0.26-1.8, logrank P=0.44), or the composite outcome of mortality or infection (HR 0.55, 95% CI 0.24-1.23, logrank P=0.14) were not different between the groups. The majority of infections

were due to gram-positive bacteria (73%), most commonly methicillin susceptible *S. aureus* (36%).

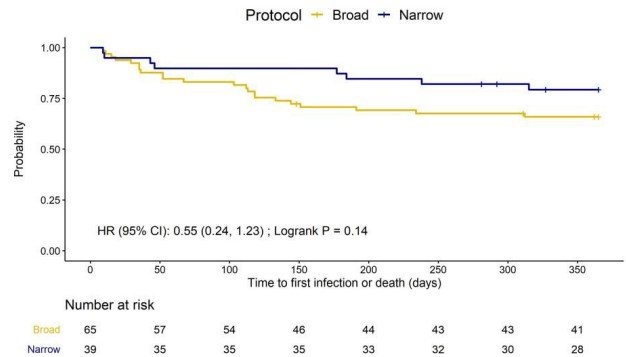
Time to Mortality



Time to First Infection



Composite Outcome (Time to First Infection or Death)



Conclusion. This study supports the use of narrow spectrum antimicrobial prophylaxis in LVAD implantation. These results highlight an opportunity to improve antibiotic use in LVAD implantation.

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903. SSI Trends in Community Hospitals from 2013 to 2018

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Session: P-42. HAI: Surgical Site Infections

Background. Surgical site infections (SSIs) are common causes of hospital-acquired infection. However, only sparse data are available on the recent epidemiology of SSIs in community hospitals.