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IDENTIFICATION OF CUTIBACTERIUM ACNES FROM DEEP TISSUE CULTURES IN CLEAN PRIMARY IMPLANT SHOULDER SURGERY

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RESUMO

Introduction: *Cutibacterium acnes* is a commensal Gram-positive bacterium, facultatively anaerobic bacillus related to surgical site infections (SSI) and orthopedic implant-associated infections (OIAI), which can imply on reoperations, prolonged antibiotic treatment and potential loss of the implant. *C. acnes* has been regarded as a silent microorganism that may impose threats on the healthcare system. **Objectives:** We aimed to identify the presence of *C. acnes* on multiple samples of deep shoulder tissues collected aseptically during clean shoulder surgeries among patients that neither had undergone previous invasive procedure on the shoulder nor had a clinical history of infection. Moreover, we investigated the role of thioglycollate broth (TG) and tryptic soy broth (TSB) the recovery rate of *C. acnes*. **Methods:** A total of 84 patients submitted to primary shoulder surgery from 8 different hospitals in the city of São Paulo between June-December 2020, had 3 intraoperative deep tissue samples collected, two of them were randomically placed in TG and one with TSB. For 14 days, the TG samples were placed into anaerobic jar at 37ºC, while the TSB samples were incubated in aerobiosis at 37ºC. Positive growth medium samples were then inoculated onto sheep blood agar plates and incubated for 14 days at 37ºC in the anaerobic jar. Identification was carried out using Matrix Assisted Laser Desorption Ionization Time of Flight Mass Spectrometry (MALDI-TOF MS). **Results:** Patient's mean age was 51 years, and 54% were male (n = 45/84). Overall, bacteria were recovered on 27.3% (n = 23/84) of patients investigated. A total of 255 samples were collected (3 samples per patient), distributed as tendon 36.1% (n = 92/255), bone 31.4% (n = 80/255) and bursa 29.8% (n = 76/255) inoculated on TG. Importantly, on 57% (n = 13/23) and 43% (n = 10/23) of patients only one and more than one tissue sample grew any bacteria, respectively. Moreover, in 21.7% (n = 5/23) of the patients, two or more positive tissue samples with *C. acnes* were identified. Interestingly, identification of *C. acnes* and other species were observed in 11.7% (n = 30/255) and 9.8% (n = 25/255) of tissue samples, respectively. Other species comprehend *Escherichia coli*, *Escherichia hermannii*, *Acinetobacter baumannii*, *Staphylococcus capitis*, *Enterococcus faecalis*, *Staphylococcus epidermidis*, and *Propionibacterium acidifaciens*. Positive growth was slightly higher in TG than in TSB, in which, tendon had 13.3% (n = 4/30), bone 26.7% (n = 8/30) and bursa

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26.7% (n = 8/30) in TG, while in TSB growth was observed in tendon 10% (n = 3/30), bone 13.3% (n = 4/30) and bursa 10% (n = 3/30 **Conclusions:** The literature for the identification of *C. acnes* is scarce and the relevance of this work highlights the higher frequency of isolation of *C. acnes* on apparently sterile deep tissues among patients with no signs and symptoms of shoulder surgical site infection.

PALAVRAS-CHAVE: Cutibacterium acnes, MALDI-TOF MS, Shoulder surgery, Thioglycollate broth, Tryptic soy broth.

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