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Why won't this heal?: Actinomyces and wounds

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Executive Summary

Title

Why won't this heal? *Actinomyces* and wounds

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Introduction of the Problem

An incidental finding of *Actinomyces europaeus* in a refractory healing abscess presents an opportunity to close a knowledge and treatment protocol gap. After finding *Actinomyces* species in multiple patients within a seven-month period in a wound care clinic in Chicago, IL, the probability exists that *A. europaeus* is becoming more prevalent in subcutaneous wounds. However, the diagnosis may be missed due to the complexity of testing and lack of knowledge of this species in the differential diagnosis.

Literature Review

Actinomyces europaeus is a Gram-positive, filamentous, non-acid-fast and anaerobic-to-microaerophilic bacteria that was originally identified in 1997 and found in the oropharynx and reproductive track of females (White & Woolley, 2018; Funke, Englert, Frodl, Bernard & Stenger, 2010). Typical wound cultures will miss *Actinomyces* bacterium because it is a rare finding outside its' normal habitat, length of time to grow and wound cultures traditionally not including anaerobic testing (Kononen & Wade, 2015). Treatment guidelines from the Centers of Disease Control for subcutaneous abscesses include incision, drainage and culturing; treatment protocols do not include testing for *Actinomyces* (CDC, 2007). Treatment protocols for *Actinomyces europaeus* are also unique because of the use of long-term penicillin, which is not

included in the current guidelines (Barberis et al., 2017; CDC, 2007; Ramakrishnan, Salinas & Higueta, 2015; Sharkawy & Chow, 2018).

Project Methods

An educational quality improvement project on the identification, risk factors, testing, and treatment for *Actinomyces* species was presented to clinicians in an independent hospital in Chicago, Illinois. Pre- and post-education survey results, frequency of requests for *Actinomyces* testing, and positive results were collected.

Evaluation

The primary outcome measurement was pre-and post-education assessment. As well as the count of positive tests. This provided baseline knowledge or knowledge deficit of this bacterium and then the post education understanding will allow for knowledge transfer and understanding of both the bacterium, when to culture for the bacterium and protocols of treatment. Volume of testing is in aggregate form, there is no patient data, no patient account numbers, medical record numbers or diagnosis. All data will be evaluated using SPSS for statistically evaluation.

Impact on Practice

A statistically significant educational outcome showed an increase in knowledge, awareness, and identification of the appropriate testing and treatment protocols for refractory wounds. Since October 2017, 17 specimens were cultured for *Actinomyces*; 41% (n=7) were positive. These findings support that this is a clinically relevant bacteria to consider for refractory wounds. Replication of this study on a larger scale is feasible with training and automation of the ordering of this additional testing on wound cultures.

Conclusions

Actinomyces species may be prevalent in refractory wounds. Additional multi-site studies as well as updating the treatment algorithm related to subcutaneous wounds/abscesses should be considered.

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