Microbial flora and antibiotic resistance in odontogenic abscesses in Upstate New York

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ABSTRACT

Objectives: To identify the most common bacteria in odontogenic oral abscesses and to determine the prevalence of antibiotic resistance of pathogens responsible for odontogenic oral abscesses.

Methods: A retrospective review of patients with odontogenic abscesses was conducted. Medical records were analyzed for the pathogen and antibiotic sensitivities. Medical comorbidities and drainage techniques were also reviewed.

Results: Multiple bacteria species were identified in 59.69% of odontogenic abscesses, and single bacteria species were identified in 40.31%. 46 different pathogens were analyzed for the pathogen and antibiotic resistance. Pathogens with intermediate minimum inhibitory concentration. Penicillin resistance was identified in Stomatococcus (50%), Lactobacillus (32.56%), Prevotella strains (19.38%), and alpha hemolytic Streptococci in 34.11%. 46 different pathogens were analyzed for the pathogen and antibiotic resistance. Pathogens with intermediate minimum inhibitory concentration. Penicillin resistance was identified in Stomatococcus (50%), Lactobacillus (32.56%), Prevotella strains (19.38%), and alpha hemolytic Streptococci in 34.11%

METHODS AND MATERIALS

This study looks at adult and pediatric patients who presented to Upstate Medical University with head and neck abscesses. A total of 200 patients were included in the study, from 2002 to 2012. The diagnosis of an odontogenic abscess was made via drainage that yielded putrid material. All patients were deemed to have an odontogenic source through the clinical assessment of an Otolaryngologist (resident or attending).

Drainage of the odontogenic abscesses was performed via either translabial or transcutaneous incision. A transcutaneous approach was used in those cases with deep neck space involvement, multiple loculations or where there was determined to be safer or better exposure via external approach either clinically or radiographically. The drainage procedure was done in the operating room in cases of severe trismus preventing exposure, failed intraoral drainage, poor patient tolerance, or deep space neck involvement.

Internal institutional review board approval was obtained prior to this study. The medical records were reviewed of all patients at the State University of New York Upstate Medical University hospital who were diagnosed with an odontogenic abscess by the Department of Otolaryngology from 2002 through 2012. All patients included in this study had drainage of their abscess and cultures taken from the abscess fluid. Patients with an abscess at the site of a facial fracture, other than a fractured tooth, were excluded.

The prevalence of antibiotic resistance was determined by the minimum inhibitory concentration. Penicillin resistance was identified in Stomatococcus (50%), Lactobacillus (32.56%), Prevotella strains (19.38%), and alpha hemolytic Streptococci in 34.11%.

DISCUSSION

The majority of studies suggest that head and neck abscesses are secondary to odontogenic sources are polymicrobial in between 59 to 89% of cases. This is consistent with our study and others. Staphylococci were the most common pathogens identified in our study. Most studies are consistent with Prevotella and Stomatococcus as common sources. There is some debate on the common aerobic oral bacteria in these types of infections. In our study, Stomatococcus was seen in 34%, Streptococcus milleri in 32%, and beta hemolytic Streptococcus in 6% of abscesses. Alpha hemolytic Streptococci strains include Streptococcus viridans, mutans, and mitis, which prior studies suggest as the most common Streptococcal strains that are seen in odontogenic abscesses, however several studies do report that they are commonly seen in odontogenic abscesses in the United Kingdom, which is similar to our study regarding Upstate New York.

In terms of antibiotic resistance, penicillin resistance was related to odontogenic abscesses. Only 3 abscesses grew out organisms with penicillin resistance, which was due to Lactobacillus, Stomatococcus and Morganella. The literature varies in terms of penicillin resistance, ranging from 0% to 100% depending on the organism, date and location of the study. The three types of Streptococcal strains that were the most common were alpha hemolytic, milleri and beta hemolytic. Overall, antibiotic resistance was seen in seven different pathogens (table 2). Cefazolin and erythromycin were the most common antibiotics to which there was resistance.

REFERENCES


CONCLUSIONS

Most oral odontogenic abscesses were polymicrobial, with the most common pathogens being alpha hemolytic Streptococcus, Streptococcus milleri, or viridans, and coagulase negative Staphylococcus. The most common antibiotic resistances were to clindamycin, and erythromycin, which should be considered when deciding initial antibiotic therapy.