Antibiotics Sensitivity Test as an important investigation measure in the Management of Odontogenic Abscesses: Clinical Study.

Emad H. Abdulla, Haitham Y. Mohammed, and Maha I. Abdulaziz

College of Dentistry, University of Tikrit, Tikrit, Iraq

(Received : 1 / 2008, Accepted : 1 / 2008)

Abstract:
The purpose of this study was to know the prevalence of microorganisms in odontogenic infections and the antibiotics sensitivity test for these isolated microorganisms in patients in Al-Door city by studying (19) females and (6) males. It showed that Viridans Streptococci, Aeromonas, commensal Neisseria sp., Haemophilus sp., Enterobacter, Staphylococcus aureus, Streptococcus sp. was isolated from patients suffer from odontogenic infections. Erythromycin, gentamicyn, tetracycline, tobramycin, rifampicin are more effective for isolated bacteria. Health education programs to improve oral hygiene practice should be considered.

Keywords: odontogenic infections, microbiological diagnosis, dental abscess, antibiotics sensitivity test.

Aims of study:
To identify the prevalence of microorganisms in odontogenic infections and the antibiotics sensitivity test for thus isolated microorganisms.

Introduction:
A typical odontogenic infection is a dentoalveolar abscess that spreads deeply into the soft tissue rather than exiting superficially through the oral and cutaneous route, consequently involving the fascial space. Following the path of least resistance through connective tissue and along fascial planes, infection may diffuse quite distantly from its dental source, causing damage to the surrounding structures. Appreciation not only the anatomy of the face and neck necessary to predict the pathway of spread of these infections, but also knowledge of how to drain these space adequately.[1]. Odontogenic infection are usually mild and easily treated. Conversely, odontogenic infection may be complex and require that the patient be admitted to hospital. Some infections that occur in oral cavity include anaerobic microbes. Saliva may contain up to 109 aerobic and facultative anaerobic bacteria observed clearly like Actinomyces, Fusibacterium, Leptothrix, Spirochetes, and two species of Streptococci i.e. Streptococcus mutans and Streptococcus sangius. When the person becomes edentulous Lactobacilli, Bacteroides melaninogenicus will disappear.[2,3]. There are a series principles of therapy of odontogenic infections which includes determine severity of infection, evaluate state of patients host defense mechanisms, determine whether patient should be treated by general dentist or specialist, treat infection surgically, support patient medically choose and prescribe appropriate antibiotic, administer antibiotic properly, and evaluate patient frequently.[4]. The treatment of odontogenic infections is based on two fundamental elements: mechanical-surgical management and antibiotherapy.[5]. In some cases, antibiotic prescription is empirical and based on the clinical condition of the patients.[6].

Materials and Methods:
A) Sampling:
This study was conducted in Tikrit during the period between Jun 2007-January 2008. 25 patients complain from odontogenic abscesses in special dental clinic have been examined and treated surgically by abscess drainage. The age of patients ranged from 18-50 years old. Patients were in both sex. In the same time swabs taken from the bloody area by using swab.

B) Culture:
After that each swab was cultured directly on blood agar plates and mac Congey agar plates and incubated at 37°C for 24 hours.[6].

C) Identification and diagnosis of bacteria:
All isolates were identify by using gram stain and biochemical test(conventional methods).

D) Antibiotic sensitivity testing:
Which occur by a loop full from all isolates was inoculated into BHI broth directly and incubated at 37°C for 18 hours. The bacterial suspension poured on the surface of the blood agar plates, and left for 10 minutes to settle the bacteria. The excess of the bacterial suspension were discarded using Pasteur pipette. The plates were left for one hour at room temperature to dry
The antibiotic discs were placed by sterile forceps cleaned with alcohol. The diameter of inhibition zone were measured.

**Results:**
The present study showed that 19 of Twenty Five patients studied were females as showed in table 1. There are different type of bacteria isolated from patients which includes Viridans streptococci, Aeromonas, commensal Neisseria, Haemophilus, Enterobacter, Staphylococcus aureus, Streptococcus sp., Streptococcus pneumonia (Table 2). The various antibiotics used in this study. Antibiotic sensitivity of isolated bacteria showed in table 3.

**Table (1): Sex distribution among patients.**

<table>
<thead>
<tr>
<th>Sex</th>
<th>No. of Patients</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Females</td>
<td>19</td>
<td>76%</td>
</tr>
<tr>
<td>Males</td>
<td>6</td>
<td>24%</td>
</tr>
<tr>
<td>Total</td>
<td>25</td>
<td>100%</td>
</tr>
</tbody>
</table>

**Discussion:**
The microbiological environment of an odontogenic infection is complex. It was now well established that typical odontogenic infection is a mixed aerobic and anaerobic infection. The most commonly isolated aerobic species were streptococci. Staphylococcus aureus was not a common isolate. This study agreed with, who found that the commonly found species were different strain of streptococci and one species of staphylococcus aureus. As regards antibiotic susceptibility, an active in a study of dentoalveolar abscess reported facultative anaerobes to exhibit similar percentage of resistance to amoxicillin (7%). In our study, for facultative anaerobic bacteria, the resistances were slightly lower this agreed with. Other authors have reported high facultative anaerobe resistance to penicillin, since the patients involved have severe condition and had been previously and infectively treated with antimicrobials on outpatient basis. Unlike, who found low percentages of resistance to clindamycin in facultative anaerobes bacteria, we record high relatively high resistance in terms of absolute values(0%). reported the efficacy of penicillin in periodontal abscess to be similar in the treatment of odontogenic infections. Similar observations were published by, who in their comparative study to penicillin, amoxicillin, and clindamycin for the treatment of cellulates of periapical origin, found no significant differences among treatments, in their comparative study of penicillin, amoxicillin, and clindamycin for the treatment of periapical origin, found that Staphylococcus aureus and viridans streptococci sensitive to clindamycin (75.3% and 42.7%) respectively. The need to combine medical therapy with surgical drainage of purulent material was noted in the treatment in large infections, also in many cases medical therapy alone was enough.
References:
1- Sarmiento V.L. 2006;Clinical application of povidoneiodine oral antiseptic 1% (Betadine, mouthwash) and povidone -iodine skin antiseptic 10% (Betadine, solution) for the management of odontogenic and deep facial space infection. 212(112-114).
3- Kris B. 1997; What kind of bacteria in your mouth all of the time ? How does it survive. Microbiology. Indiana University.
4- Edward B.2000; Pharmaceutical microbiology (Quality control), G enzyme corporation. Diagnostic microbiology. Indian University.
9- Nolte WA. 1982; Oral microbiology with basic microbiology and immunology.4th ed
12- Murray PR., Baron EJ., Pfaller MA., Tenover FC., and Yolker RH.1999;Manual of clinical microbiology.7th ed
14- Sameer MK.2000;Aretrospective analysis of orofacial infections requiring hospitalization in Al-Madinah , Sudi Arabia.
17- Levison ME., Mangura CT., and Lorber C. 1983; Clindamycin compared with penicillin for treatment of anaerobic lung infections. 98:466-71.
Acknowledgments: The authors thank Samah Hashim, director of Laboratory of Microbiology in Al-Door city.

أهمية اختبار المضادات الحيوية في السيطرة على الخراجات الناشئة عن التهابات الفم والأسنان:دراسة

تعليمية
عماد حمودي عبد الله و هيثم يونس محمد و منها عصام عبد العزيز
كلية طب الأسنان ، جامعة كربلاء ، العراق
( تاريخ القبول: / 2008 / 2008 )

الم#: الغرض من هذه الدراسة هو للتعريف على الأحياء المجهرية في إصابات واختيار الحساسية للمضادات الحيوية لهذه الأحياء المجهرية المعزولة من المرضى Viridans streptococci ,Aeromonas, commensal Neisseria sp. ,Haemophilus sp. ,Erythromycin, Enterobacter ,Staphylococcus aureus, Streptococcus sp. في منطقة الدور (19)ذكر و(2)ذات لوح إن E. coli حسب المرضى الذين يعانون من إصابات الفم والأسنان. الأحياء المجهرية المعزولة من المرضى تأثيرها للبكتيريا المعزولة. يجب أن يؤخذ بنظر الاعتبار الالتهاب المزمن للفم التابعة للمنظمة الصحية العالمية.