Case Report

JRAD Journal of Research and Advancement in Dentistry

J Res Adv Dent 2018;8:1:33-37.

A Case of Submandibular and Buccal Space Infection with ''Acenetobacter SPP'' and ''Citrobacter Frenudii'' Micro Organisms: First Case to Report

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ABSTRACT

Background: Majority of the orofacial infections are originated from dental related infections. There are variety of odontogenic infections ranging from a simple periapical abscesses to superficial and deep neck infections which can lead to severe septicaemia and death. The micro-organisms related to these kind of oro-facial infection has been an important aspect of study for many researchers. There are numerous studies to identify the causative micro-organism for an infection. These studies shows enormous variations in their reports, concluding that there is a huge number of organisms which can be related to it. Sometimes there are two or more organisms related to a single infection and there susceptibility towards a particular antibiotics is different hence their treatment is quite challenging. In this article we report a case of multiple facial space infections with two unusual organisms Acinetobacter spp&Citrobacterfreundii as the causative factor.

Keywords: Microorganism, Oro-facial, Antibiotic.

INTRODUCTION

Infections in the orofacial region are mostly associated with diseases originated from the tooth such as pulpal diseases,periodontal diseases, periapical lesions and pericoronitis. These diseases ranges from confined periodontal & periapical infection to severe odontogenic infections of the superficial and deep facial spaces in the neck region which leads to septicaemia.

Any kind of odontogenic infection spreads depending on the systemic condition of the patient and the virulence of the microorganisms which are involved. These generally spreads following the pathway of least resistance through connective tissues and along facial planes and also can spread to a site, distant to its origin causing considerable morbidity and occasional death. Studies, concerning micro-organisms related to dental or oro-facial infections has been an appeal for many researches as different studies gives different conclusions. This difference reflects gradual changes in flora due to injudicious use of antimicrobials and also the variations in the bacteriological techniques employed for their isolation. Appropriate knowledge of common pathogens and their resistance status can guide the clinician for best selection of imperial antibiotics.

CASE REPORT

A 17year old male patient reported to Department of Oral & Maxillofacial surgery, Institute of Dental Sciences,complaining of swelling over the left side of the face from past 5days associated with severe

Received: Feb. 7, 2018**: Accepted**: Apr. 11, 2018
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pISSN 2278-0076
eISSN 2321-9270

Table 1: Organism- Acinetobacter spp.

ANTIMICROBIAL	INTERPRETATION	ANTIMICROBIAL	INTERPRETATION
Amikacin	S	Tobramicin	S
CefepimeTazobactum	S	Amoxyclav	R
CefoperazoneSulbactum	S	Cefixime	R
Cefuroxime	R	Ceftriaxone	R
Levofloxacin	S	Imipenem Cilastin	S
Minocycline	S	Meropenam	S
Ofloxacin	S	Netilmicin	S
Piperacillin Tazobactum	I		

Table 2: Citrobacterfrenudii.

ANTIMICROBIAL	INTERPRETATION	ANTIMICROBIAL	INTERPRETATION
Amikacin	S	Tobramicin	S
CefepimeTazobactum	S	Amoxyclav	R
CefoperazoneSulbactum	S	Cefixime	S
Cefuroxime	S	Ceftriaxone	S
Levofloxacin	S	Imipenem Cilastin	S
Minocycline	S	Meropenam	S
Ofloxacin	S	Netilmicin	S
Piperacillin Tazobactum	S		

Fig 1: Pre operative profile picture.

Fig 2: Pre-operative Picture Showing Restricted Mouth Opening.

Fig 3: Pre-operative Picture Showing Swelling In Relation To Left Face Region.

Fig 4: OPG.

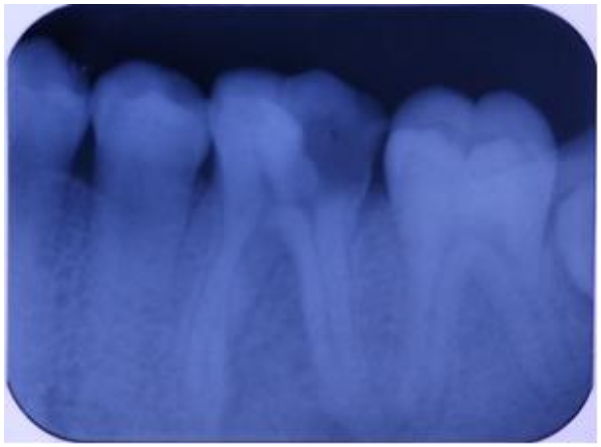

Fig 5: Intra Oral Periapical Radiograph Showing Proximal Caries In Relation To 36.

Fig 6: Placement of Corrugated Rubber Drain.

Fig 7: Post-operative Profile Picture.

Fig 8: Post-operative Picture Showing Significant Reduction of Swelling.

pain & difficulty in mouth opening anddiscomfort while swallowing.Patient had a raised temperature, pulse rate and respiration rate. No history of cough & dyspnoea.

The swelling extends superiorly from malar prominence to the submandibular region inferiorly and medially extends from corner of mouth to the retro molar region laterally. Size of the swelling is 8×8 cm approximately, skin over the swelling is stretched and it was tender & warm on palpation.[Figure 1-3] When checked intraorally the left lower 1st molar was carious with tender on percussion. There was a sinus opening on buccal side of 36 with pus discharge.

Both orthopantomogram and intra oral periapical radiograph was adviced for the patient. Both the radiographs revealed proximal radiolucency in relation to 36 along with periapical radiolucency indicating presence of dental caries in 36 with periapical abscess.[Figure4&5] Provisional diagnosis was established being left submassetric and sub mandibular space infection secondary to dental caries in relation to 36.

Emergency incision & drainage with decompression extra orally was planned for the patient. The most fluctuant part of the swelling was identified. Proper aseptic condition was achieved by scrubbing 10% providone-iodine solution, following which local anaesthesia was administered. At the determined site a stab incision was given with the help of No. 11

BP blade. The length of the incision was only large enough to ensure the entry of the sinus forceps. With the help of the sinus forceps, all the spaces were invaded to break the locules and enable maximum pus discharge. The collected pus was sent to the department of microbiology for identification of the organism and culture sensitivity. After thorough drainage of the pus, a corrugated rubber drain was inserted through the incision site and was secured to keep the wound patent, this will help in further passive drainage of the pus.[Figure 6] Patient was admitted in the in-patient ward and was started with analgesics & a combination of three antibiotics based on the patient's weight & age. (1. Inj. Dalacin-C 300mg – IV TID, 2. Inj. Piptaz 4.5gm – IV BD, 3. Inj. Metrogyl 400mg – IV TID). The left first molar which is the causative factor of the infection was extracted on the subsequent day after achieving a sufficient mouth opening. The culture and sensitivity report was obtained after 3 days, which revealed Acinetobacter spp&Citrobacterfreundii bacteria as the causative organism. Various antibiotics which were sensitive for the microorganisms are mentioned in Table 1. Both the organisms were sensitive to a common antibiotic, which was Levofloxacin. The corrugated rubber drain was removed and layer by layer closure done. The patient was planned for discharge and Tab Levofloxacin 750mg BD was prescribed for next five days. Patient was recalled after 7 days for suture removal. The swelling was considerably reduced and general health of the patient was improved drastically.[Figure 7-8]

DISCUSSION

The microbiology of acute dental infections has been in the midst of many researches. The reported microbiology of odontogenic infection was for long time inconsistent, but a major role of anaerobes has become apparent with development of improved microbial isolation and culture techniques. The use of proper broth as carrier and culture media is necessary for identification of microorganisms[1]. It is evident that orofacial odontogenic infections are polymicrobial, consisting both aerobes and anaerobes; as about 49% of species isolates were obligate anaerobes. Knowledge of the potential spectrum of pathogens, as well as regional resistance status is important for rational chemotherapy. The microbiological pattern of DNIs is generally polymicrobial, including aerobes and anaerobes. As a consequence, an empiric antibiotic therapy should be targeted at aerobic and anaerobic pathogens[2,3].

The microbiology of deep space neck infections continues to evolve. In 1983, Streptococci (61%) and Staphylococcus species (32%) comprised the majority of pure cultures in maxillofacial infections (28%). More recently, Brook found that the most common isolates in paediatric head and neck infections are Staphylococcus aureus (aerobic) and Bacteroides species[5]. In patients with dental infections as the predisposing factor, anaerobic isolates either as pure cultures or in a mixed flora predominate. This is consistent with the observation that anaerobic bacteria outnumber aerobic species in the oral cavity by 10 to one[6]. Greater resistance of bacteria to antibiotics, especially penicillin, has been another trend. Recent findings could preclude penicillin as an automatic choice in head and neck infections. Beta-lactamase-producing organisms can survive penicillin therapy and may even protect penicillin-susceptible organisms by enzymatic release within the abscess. Brook found beta-lactamase activity in 46% of head and neck infections in children. Halula et al.[7] also described specific mechanisms for the transfer of clindamycin resistance in Bacteroides species. Penicillin and clindamycin have been shown to produce similarly good results in treating odontogenic infections when the rate of penicillin resistance among oral anaerobic bacteria is relatively low. Penicillin is felt by some authors to still be the antibiotic of choice for maxillofacial infections of odontogenic origin. Clindamycin is indicated in cases of penicillin allergy, recent exposure to penicillin, failure of an infection to respond to penicillin therapy, or in cases where the known pathogen is Bacteroides fragilis[8].

Acinetobacter strains are often resistant to antimicrobial agents and therapy of infection can be difficult. Susceptibility testing should be done to help select the best antimicrobial drugs for therapy[9]. Isolates of Acinetobacter spp., particularly A.baumannii are often resistant to penicillins, other than carbenicillin and cephalothin, and a penicillinase is said to be formed. Resistance to sulphonamides, streptomycin, chloramphenicol, erythromycin and tetracycline is usual. They are

often resistance to gentamicin and other aminoglycosides. Variable sensitivity to second and third generation cephalosporin has been found, and individual susceptibility testing must be performed to determine strain variations. Combined treatment with an aminoglycoside and ticarcillin or piperacillin is synergistic and may be effective in serious infections[10].

Members of the genus Citrobacter are motile, indole positive or negative, MR positive, VP negative, citrate positive, urease weak positive and may or may not ferment lactose but they nearly always produce B-galactosidase. Lactose fermentation may be rapid or late. They do not decarboxylate lysine but most strains decarboxylate ornithine. Genus Citrobacter has three species: C.freundii, C. koseri (C. diversus) and C. amalonaticus. They can grow well on ordinary media like nutrient agar producing smooth convex colonies 2-4 mm in diameter. They are not pigmented. Rough or mucoid forms sometimes occur. On Mac-Conkey and DCA media, they form pale colonies and share somatic antigens with salmonellae. Therefore, when encountered in cultures of faeces they may be mistaken for salmonellae. However, they can be distinguished by their negative lysine decarboxylase and positive KCN reactions. Some strains possess a K antigen closely related to Vi antigen of S.Typhi and S.Paratyphi C. citrobacter is a normal inhabitant of human intestine and may cause urinary tract, gall bladder and middle ear infections. C.koseri may occasionally cause neonatal meningitis[10].

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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