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STUDY THE BACTERIAL PROFILE IN PATIENTS WITH DENTAL INFECTIONS

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ABSTRACT

The most prevalent human infection in the world is thought to be dental infection. In the current investigation, bacterial sources of dental infections were isolated, and antimicrobial activity swabs were collected from 80 patients, including both male (n = 33) and female (n = 27) patients who had symptoms of tooth infection. To obtain a pure culture of the bacteria, the samples were inoculated onto various freshly prepared bacteriological media, including mitis salivaris (MS), Blood agar, Mannitol Salt Agar (MSA), Methylene Blue Agar (EMB), Nutrient Agar (NA), and MacConkey Agar (MAC) (Life save Biotech, USA). After that, these medium were incubated for 24 hours at 37 °C. Bacteria were recognized using biochemical assays, Gram staining, and colony morphology. Antibiotic sensitivity tests were performed on the bacterium isolates..

1. INTRODUCTION

Dental infections can spread to the surrounding tissues after starting in the tooth or its supporting structures. The infection usually begins in necrotic pulp, periodontal pockets, or pericoronitis when face structures are damaged. Dental infections have always been prevalent, and hundreds of years ago, they were one of the main causes of mortality (1) Orthopantomography, CT scans, MRIs, and dental radiography can all be used to further examine oral infections. Imaging examinations are crucial in identifying the point of infection, the extent of the disease's dissemination, and the presence of any consequences. (2) Systemic symptoms, fascial space infections, infections that spread to the bony cortex and nearby soft tissue, and (3) Gram-negative organisms, facultative anaerobes, and stringent anaerobes all require antibiotic treatment for dental infections.

2. RESOURCES AND TECHNIQUES

Method

Study Squad There are a total of 60 patients (27female and 33male). The study group's age ranged from 15 to 55 years.

Samples for Bacterial Isolation and Culture

From both of them, a total of 60 dental infections t swabs were collected (27female and 33 male) The patient's age ranged from 15 to 55 years.

Microbiological Analysis

Dental infection swabs were cultured on the following media for the isolation of bacteria: blood agar to demonstrate the hemolytic capabilities of microorganisms

For the isolation of enterobacteriacea, use Mac Conkey's agar; for the isolation of staphylococcus species, use Mannitol salt agar (Muller) Hinton agar: to test the antibiotic selectivity of bacteria After samples were cultivated on these three media, they were incubated aerobically at 37°C for an entire night. According to the technique, the organisms were identified.(7)

MS In order to isolate Streptococcus mutans, use Mitis salivaris agar.

Microscopically Examining the Isolates to Identify Them
Gram's stain was used to color colony smears, which were then inspected under a microscope. Gram-positive cocci, shapes, and cell arrangements of the isolated bacteria were classified as follows:
(Gram negative bacilli: Streptococcus mutans for isolation
Understanding the Isolates

Microscopical Analysis

Gram's stain was used to color colony smears, which were then inspected under a microscope. The isolated bacteria were classified into two groups based on Gram Staining reactivity, morphology, and cell arrangement: Gram positive cocci and Gram negative bacilli.

Diffusion Test on Disk

The Kirby-Bauer disc diffusion method was used to test isolates of Streptococcus mutans for susceptibility on Mueller-Hinton agar. Each isolate's bacterial colonies were then added to a suspension medium that had been turbidity-adjusted to 0.5 McFarland standards (1.5 108 CFU/ml). Using sterile forceps, four commercially available antibiotic disks containing tobramycine (10 m), deoxycycline (10 m), nalidixic acid (30 m), and amoxicillin (30 m) were applied to the whole surface of agar plates after the inoculums(5)disks are on a plate. Inverted plates were heated for 18 to 24 hours at 37 °C. Zones of inhibition were determined in accordance with the Clinical and Laboratory Standards Institute (CLSI) recommendations (8).

Identification of S. mutans by DNA sequences:

DNA was taken out using the correct procedures. advised by the manufacturer (Bioneer, from mixed bacterial culture on Mitis (South Korea)

Salivaris Agar (MSA) and brain Hart cultures infusion soup (BHI). PCR procedure
Sm479F species-specific primer has been completed:
TCGCGAAAAAGATAAACAAACA 5'--3′ and

5′-GCCCCTTCACAGTTGGTTAG- Sm479 3′. The response was carried out as follows:
3 minutes at 94 degrees, then 40 cycles at 95 degrees55 °C for 30 seconds, 72 °C for 59 seconds, and finally, for extension, 5 minutes at 72°C. The 2 percent was used to test PCR magnification 50 minutes at 100 volts applied to agarose gel. In TBE buffered with (Tris, Borat-EDTA) and stained with solution of ethidium bromide (5 micrograms/ml). It was arrested on the final pictures of the gels by the digital camera.

3. RESULTS

Biochemical Investigation The identification of bacteria isolated from dental diseases 33 female patients and 27 male patients who matched the study's eligibility requirements had samples tested. the four age groups that make up it, in (Table1).

The age breakdown of dental patients is seen in Table 1.

Age group / years	No. of patients	% Percentage
25-15	**11**	%18
35-25	**23**	%39
45-35	**21**	%35
55-45	**5**	%8
Total	**60**	%100

Table 2 shows the gender distribution of patients with dental infections.

disease	male	% Percentage	Female	% Percentage
Periocornitis	**12**	**%52**	**11**	%48
Abical peridentitis	**17**	**%63**	**10**	%37
Abscess	**4**	**%40**	**6**	%60

Table 1 demonstrates that infections are more common in the 25- to 35-year-old age group and that males are more likely to contract infections overall than females Gram stain technique, enriched and differential media, the blood agar and mitis salivaris, MacConkey agar, Eosin methylene blue, and mannitol salt agar, as well as biochemical assays, are used. growths of S. Mutans, E. fecalis, S. aureus, Klebsiella, and Escherichia coli were identified (catalase test, oxidase test, coagulase test) Strp Mutaus showed alpha hemolysis on blood agar while E. fecalis showed complete hemolysi Blood agar, Eosin, Methylene Blue, and MacConkey agar were used to create what appeared to be a central depression on the blood agar. . E. coli colonies appeared as non-mucoid pink colonies on MacConkey agar.and metallic shine could be detected on Eosin methylene blue.On MacConkey agar, klebsiella were observed as sizable, pink, and mucoid colonies. S. Mutans, E. fecalis, and S. aureus were all identified as Gram positive cocci after being isolated from dental infections and cultured on various types of agar.S. aureus was found to be a Gram-positive cocci but only showed up in clusters. . As Gram negative rods, E. coli and Klebsiella species were identified. When catalase and oxidase tests were performed under a light microscope, it was found that StWhile E. coli and Klebsiella had positive catalase activity, strp Mutaus exhibited positive oxidase activity but negative catalase activity. E. coli oxididase testing came back negative. Negative oxidase was found in Klebsiella. Staphylococcus was catalase-positive as evidenced by the fact that it was both oxidase negative and catalase positive. Coagulase was found in S. aureus, but biochemical tests, like those used in dole, were used to identify Gram-negative bacteria. Positive results were obtained from tests for methyl red, Vogas-Proskauer, citrate content, and Kligler iron agar. Positive findings for Simmon

Citrate demonstrate that the medium turns green after 24 hours of incubation because a red ring forms with the addition of Kovacs' reagent. The color blue still stands for a bad consequence. A positive Vogas-Proskauer result was obtained by a red ring forming when the reagent was added.

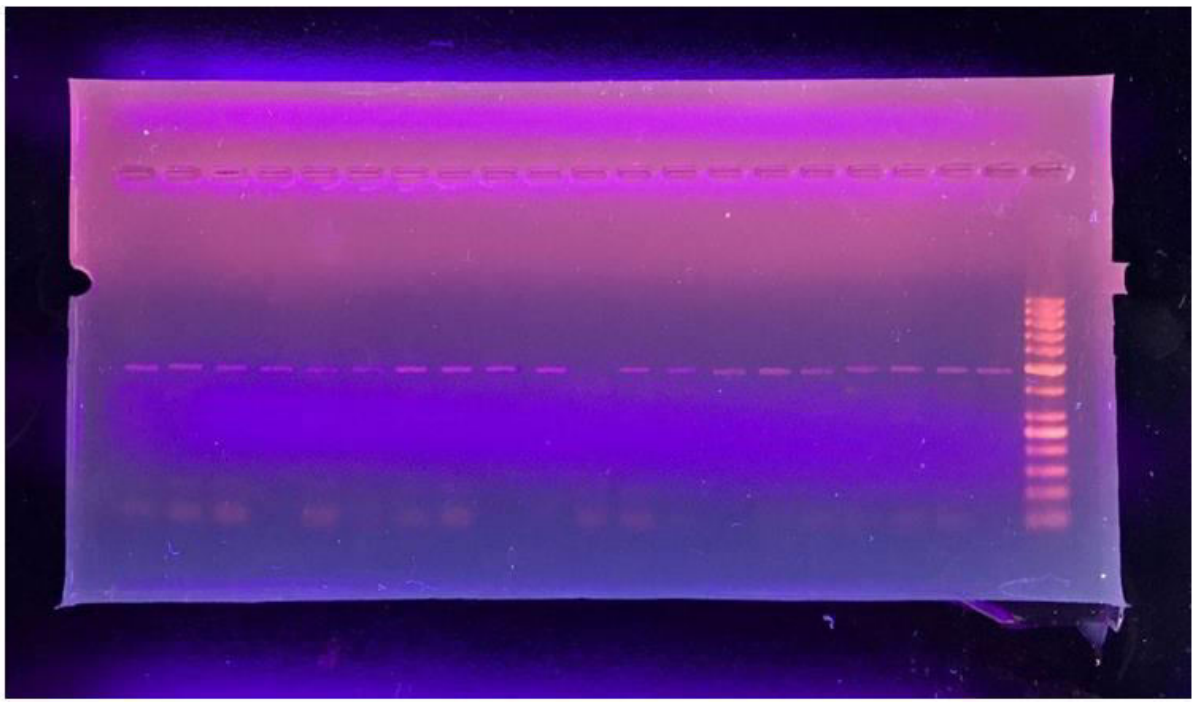
Detection and Isolation of Dental Infection-Producing Bacteria

isolation of sore throat-causing bacteria from the 60 clinical samples This investigation involves the isolation of various gram-negative bacterial species. Ten Klebsilla isolates, six E. coli isolates, fourteen Staphylococcus aurus isolates, fourteen Lactobacillus isolates, twenty-five Streptococcus Mutans isolates, eight Staphylococcus Epidermis isolates, and eighteen Enterococcus fecalis isolates are listed in table (3).

The percentage of bacteria isolated from oral infections is shown in Table 3

Bacteria	No. of distribution	% Percentage
St. mutns	**25**	%26
E.fecalis	**18**	%19
Staph. aurus	**14**	%15
Lactobacillus	**14**	%15
Klebsiella	**10**	%11
Staph. Epidermis	**8**	%8
E.coli	**6**	%6

This study examined the sensitivity of microorganisms causing tooth infections to several antibiotics. The analysis of the sensitivity pattern of Strp mutaus revealed that they were susceptible to tetracycline, imepeneme, and vancomycine and resistant to ceftriaxone and Bacitracin.



Using PCR to identify S. mutans

Sm479F/R Primers using PCR Specificity Product Gel Electrophoresis. S. mutans Isolates Numbered were Positive at Agarose Gel at 60 Volt for 60 Minutes, indicating DNA Amplification.

4. DISCUSSION

Streptococcus mutans and Enterococcus fecalis were found to be the most prevalent bacteria isolated from dental infections, accounting for 26% of all Strp mutans isolates and 19% of all E. fecalis isolates. Other mixtures of bacteria, including E. coli, klebsiella, lactobacillus, and staphylococcus, were also found to be present. As can be seen in these results were agree with (9) show that among the 60 positive the primary organism isolated was Strp mutaus 25(26%) and the least organism isolated was E.Coli 6(6%).Streptococcus mutans was shown to be the most frequent bacterial cause of dental infections in the current investigation, which

supports the findings of (10) Streptococcus mutans is the most prevalent bacterial dental infections. The current study and this study (both of which were in agreement with study 11) reveal that all isolates of Streptococcus mutans were discovered to be amoxicillin resistant (12). I disagree that the results of this study indicated that Streptococcus mutans was susceptible to Doxycycline (13)

The purpose of this study was to evaluate the value of PCR in the detection of S mutans. Out of 60 isolates, about 25 were found using a molecular technique. We can see that S. mutans is a common bacteria that causes dental infections, which is in agreement with the results that showed that PCR is a more sensitive and specific method for detection of s. mutans was isolated from dental infections. Figure 1 (Wang et al., 2012) provides

This study set out with the aim of assessing the importance of PCR in detection of s mutans About 25 isolates of s mutans out of 60 were detected by molecular method .These results were indicated that PCR is a more specific and a sensitive method for detection and characterization of s.mutans was isolated from from dental infections ,we see the S.mutans must common bacteria causes dental infections that agreement with another result (14) which present in figure

5. CONCLUSION

The most common of bacterial isolated from dental infections in this study was streptococcus , Entercococcus , and the other gram negative bacterial isolated from dental infections were *E..coli, staphylococcus* and *Klebsella* ,the result of antimicrobial activity against Streptococcus mutans was resistances to bactracine , but sensetive to nalidixic acid , tobramycine .
PCR use for identification of ,S.mutans

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