A Clinical and Bacteiological of Oral and Dental diseases (dental caries) in Tikrit city

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Abstract:-

A clinical and bacteriological study for oral and dental health was carried out in Tikrit City during the year 2006 to determine the main types of bacteria that caused dental caries in 50 patients (25 males and 25 females) ranging in age from 13-70 years old. Among the 50 patients, 15 of them (30%) showed that the isolated pathogens were *Streptococcus sanguis*, 11 of them (22%) showed *Lactobacilli*, 9 of them (18%) showed *Streptococcus mutans*, 7 of them (14%) showed *Porphyromonas gingivalis*, 6 of them (12%) showed *Fusobacterium nucleatum*, and 2 of them (4%) showed *Actinomyces*, decay remains an important problem, chronic and irreversible process and requires prolonged treatment.

Introduction:

Dental caries is a chronic invasive disease which involve initial demineralization of tooth followed by destruction of the organic phase of the dentine (1). Accumulation of bacterial biofilms (plaques) on tooth surfaces results in some of the most prevalent bacteria- induced diseases of man- caries and inflammatory periodontal diseases (2).

The adherent plaque composed largely of *Streptococci* and , depending on the surface , may also include *Lactobaccilli* and certain other Gram-positive filamentous (thread-like) organisms, and these organisms come in contact with carbohydrates, resulting in an end product of lactic acid and other substances capable of damaging tooth structure(3).

The aim of this clinical study was to determine the main types of bacteria that caused dental caries.

Subjects and Methods:-

The present clinical study was designed as a randomized fifty patients (25 males; 25 females) from 13-70 years of age attending the private dental clinic in tikrit city during

year 2006.

Fifty samples of dental carious tissues with food debris accumulated in the carious cavity were collected from subjects with a sterile excuvature from site of decayed teeth and placed in a sterile tube containing 100mm of reduced transport fluid (RTF). The samples were inoculated in nutrient, blood agar (Oxiod) aerobic and anaerobic for 72 hour at 37C. All samples were processed using standard technique.

Results:-

Fifty patients were examined, 25 males and 25 females. Among the 50 patients, 15 of them (30%) showed that the isolated bacterial pathogens were *Streptococcus* sanguis (Table 1); 11 of them (22%) showed *Lactobacilli*; 9 of them (18%) showed *Streptococcus* mutans; 7 of them (14%) showed *Porphyromonas* gingivalis; 6 of them (12%) showed *Fusobacterium* nucleatum; and 2 of them (4%) showed *actino-myces* bacterial pathogens.

Microorganism	No. of isolated pathogens	Percentage of isolated bacterial pathogens
Streptococcus sanguis	15	30 %
Lactobacilli	11	22 %
Streptococcus mutans	9	18 %
Porphyromonas gingivalis	7	14 %
Fusobacterium nucleatum	6	12 %
actinomyces	2	4 %
Total	50	100 %

 Table (1):- The types, numbers and percentages of microorganisms isolated from 50 patients of dental caries.

Discussio

The data of the present clinical study in which bacteria was isolated from 50 patients with dental caries revealed that *Streptococcus* sanguis, *Lactobacilli* and *Streptococcus* mutans are the first and most frequentlyenounted pathogenic bacteria in dental plaque that lead to cause dental caries, while *Porphyromonas* gingivalis, *Fusobacteria* and *Actinomyces* are the second pathogenic bacteria in dental plaque that lead to cause dental caries. *Streptococcus* sanguis and mutans represented the majority of isolated pathogenic bacteria to form pellicle which considered as the first stage of plaque development on a tooth surface, this pellicle is deposited as a result of bacterial activities on glycoproteins in saliva. Microorganisms begin to colonize the tooth surface and lead to supragingival plaque. The first organisms to arrive are the *Streptococci* which have a

specific ability to adhere and colonize the tooth surface (5).

The *streptococci* will have actively grown on tooth surfaces within 24 to 48 hours if not removed by hygienic procedures. Within 72 hours the plaque has reached its maximal ability to reduce pH on the tooth surface. Plaque may accumulate, mature and its basic cariogenicity is at maximum with approximately 3 days. After colonization of the tooth by *Streptococci*, a continous etiologic progression occurs (6).

The ability of *Streptococci* to produce smooth surface decay is related to their ability to produce an adhesive matrix of polysaccharides around the bacterial cells. This matrix contributes a variety of properties related to decay: 1. protection of the bacteria, 2. adhesion, and 3. food reserve. For these reasons, *Streptococci* have a specific cariogenic characters and considered to be the primary agent of dental decay (7).

Lactobacilli contacted with carbohydrates, adhere to the tooth surfaces and form an end product of lactic acid and other substances capable of damaging tooth structure (8). This adherence is highly specific and represents an interaction between the organism and the tooth. *Lactobacilli* are capable of initiating growth at a lower

pH than any other oral bacterium, so that it was suggested that some species of *Lactobacilli* were the prime agents of dental decay (9).

Actinomyces, Fusobacterium and Porphyromonas gingivalis are responsible for a basic form of plaque at and below the gingival margin and the irreversible phase of the disease, dental caries, is characterized by damage of the tooth structures. So that these microorganisms in supra-gingival plaque considered to be the aetiologic agent of caries (10).

It is important to point out that due to the different techniques, differences in sample processing and culture media, the obtained results in this present clinical study should not be extrapolated to other procedures.

Our results are agreement with (5, 6, 7, 8, 9 and 10) who foundly that microorganisms in dental plaque play an important and essential role in development of dental caries and damage of tooth structure.

In conclusion, tooth brushing, scaling and current treatment regimes for plaque-related diseases involve the mechanical removal of the causative organisms (in the case of caries, this consists of drilling away the infected enamel and dentine).

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دراسة سريرية وبكتريولوجية عن امراض الفم والاسنان (تسوس الاسنان) في مدينة تكريت: عبد الله ابراهيم حمد و ثامر مطلك جاسم

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الملخص:

اجريت دراسة سريرية وبكتريولوجية عن صحة الفم والاسنان في مدينة تكريت خلال عام ٢٠٠٦ لتحديد الانواع الرئيسية للبكتريا التي تسبب تسوس الاسنان لخمسين مريضا (٢٥ ذكر، ٢٥ أنثى) ومعل اعمارهم من ١٣– ٧٠ سنة ومن بين خمسين مريضا كان ١٥ مريضا منهم (٣٠%) يبين بأن السبب المرضي هو Strep. Sanguis و ١١ (٢٢%) منهم Lactobacilli ، و ٩ منهم (١٨%) strep. Mutans ، و ٧ منهم (١٤%) منهم (٢٢%) ونتا منهم (٢١%) Fusobacterium واثنان مهم (٤%) Actinomyces. تسوس الاسنان يبقى المشكلة الرئيسية لانه عملية مزمنة وغير قابلة للاعادة ويحتاج علاج طويل.