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Syphilis Manifestations in the Oral Cavity A Review

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Abstract

Syphilis remains a challenge because of its multiform clinical patterns at onset and its ability to imitate different diseases. Oral lesions can arise in all syphilis stages; significant oral lesions such as gumma are associated with tertiary disease. Consequently, the congenital disease gives rise to dental anomalies, bone, skin, and neurological anomalies of the face. The aim of this report is to review syphilis-related oral lesions.

Keywords: syphilis; oral lesions; Treponema pallidum

Introduction

Syphilis is sexually transmitted infectious disease caused by Treponema pallidum **[1]**, which is endemic in low-income countries and occurs at lower rates in middle-income and high- income countries. The disease is important to public health because of its direct morbidity, it also increases risk of HIV infection and can cause lifelong morbidity in children born to infected mothers. Without treatment the disease can progress over years through a series of clinical stages and lead to irreversible neurological or cardiovascular complications. Syphilitic oral lesions can be presented in all stages; therefore, a good knowledge of its different oral manifestations is important for proper diagnosis and treatment **[2]**.

Epidemiology

According to the most recent estimation of the WHO, approximately 17.7 million individuals 15 - 49 years of age globally had syphilis in 2012, with an estimated 5.6 million new cases every year. The estimated prevalence and incidence of syphilis varied substantially by region or country, with the highest prevalence in Africa and > 60 % of new cases occurring in LMICs **[3]**. The greatest burden of maternal syphilis occurs in Africa, representing > 60% of the global estimate **[4,5]**. Syphilis is now the second leading cause of preventable stillbirths worldwide, following malaria **[6]**.

Etiology and Transmission

Syphilis is a sexually transmitted infection whose natural history without treatment follows an “S-E-I- R-S” system, with a short exposed (E) period following inoculation and before infectiousness. Treatment aborts the transition from infectiousness during early syphilis to a ‘recovered’ or clinically latent phase, wherein the pathogen (T.pallidum) remains in the body but cannot be transmitted to a sexual partner. Debate surrounds the duration of waning immunity following treatment in the “recovered” or latent phase of syphilis. While many epidemic models of syphilis use an average of 1–10 years of a waning or partial immunity following treatment of the latent stage **[7]**.

Classification

There are two types of syphilis: congenital, which is vertically transmitted and acquired syphilis, which is sexually transmitted **[8]**. Acquired syphilis can be classified into four stages: primary, secondary, latent, and tertiary **[9,10]**. Oral lesions are principally associated with secondary syphilis, although all stages can give rise to oral manifestations **[11,12]**. This wide array of manifestations has given syphilis the reputation as the ‘‘great imitator’’.

Primary syphilis:

Primary syphilis refers to when a primary or initial lesion is present at the site of inoculation of infection. In primary syphilis the main clinical manifestation is the presence of a painless, usually solitary, indurated, clean based ulcerative lesion that typically appears about 2-3 weeks after direct contact with another person’s infectious lesion. Although chancres are most often seen in men on the distal penis, they can be located at nearly any place where direct contact with another infected person’s lesion might occur and although sometimes unnoticed, are well described in the female vagina and cervix, in and near the rectum, and in the mouth, as well as on other potentially exposed body parts such as fingers, the neck. Genital ulcers mimicking chancres are most commonly caused by genital herpes but

can be caused by chancroid, trauma, fixed drug eruptions, and other dermatological processes. The primary chancre can be accompanied by tender or non-tender regional lymphadenopathy. T pallidum is present and might be demonstrable in specimens from the lesion base. Without treatment, after a period of 3-6 weeks, primary lesions spontaneously resolve without scarring. With treatment, lesions begin to resolve within a few days **[13]**.

Clinically, primary syphilis is characterized by the presence of a hard chancre, which is an asymptomatic ulcerated lesion with indurated margins **[11,14]**. The lesions are generally solitary **[15]** and rarely occur in the mouth **[10]**, but if present, the lips are the most affected site **[9]**. An association with painless regional lymphadenopathy has been reported **[14]**. Primary chancres heal spontaneously within 4 to 5 weeks without leaving scars. Extragenital chancres appear in 5% to 14% of cases; two-thirds of these cases occur in the mouth or perioral region after unprotected oral sex **[12,14]**.

Secondary syphilis

Several clinical forms are described for the secondary syphilis affecting oral mucosa, among which the most common is called ‘‘mucous patches’’ with two subtypes: slightly elevated-type plaques and, occasionally, ulcerated, which are usually oval and covered with a gray or white pseudo membrane; or multiple mucous patches that may coalesce to give rise to serpiginous lesions, described as snail track ulcers. White plaques with verrucous aspect, so- called ‘‘leukoplakia like’’ are also described as another frequent form of disease. However, some cases can manifest atypically, and the diagnosis can be delayed or even missed [16] Oral lesions of secondary syphilis are typically multiple and symptomatic **[17]**. Lesions in the upper lip are more common in men, whereas those in the lower lip are more common in women; in the tongue it is unfamiliar to detect Nodular lesions **[9]**. Secondary syphilis lesions can appear as multiple mucosal spots surrounded by erythema on the soft palate, tongue, and oral mucosa, also it may exhibit ulcerations **[11]**. Secondary syphilis manifests variable clinical presentations, a fact that makes it difficult to finally diagnose syphilis.

Tertiary syphilis

Tertiary syphilis occurs after one year of evolution in patients who have not received treatment in either primary or secondary stages. The characteristic destructive lesion of this phase, the gumma, may represent the chronic hypersensitivity reaction to the presence of spirochete **[2]**. Clinical manifestations can appear after a variable latency **[18]**.

In the oral cavity, the gumma is often seen on the hard palate as a chronic, progressive, granulomatous lesion that may perforate through the palatal bone into the nasal septum. The tongue appears atrophic, fissured, or lobulated, and leukoplakic plaque is usually present dorsally. Follow up every three to six months and biopsy is recommended because literature related possible malignant transformation of the lesion **[2]**. It is important to know that tertiary syphilis is not infectious.

The latent stage in the literature comprises the timespan following infection with T. pallidum, characterized by sero-reactivity and no other evidence of the disease **[19]**.

Congenital syphilis

In Congenital syphilis Dental defects are the most consistent clinical manifestation of syphilis and are pronounced in teeth, which calcify in the first year of life such as permanent incisors and first molars **[9]**. Sir Jonathan Hutchinson observed that the dental defects were restricted to the permanent teeth where the colour of the teeth is also abnormal, the affected teeth being semi-translucent rather than the ivory colour of normal teeth, In incisors affected by congenital syphilis the incisal edge has been described as either notched or ‘screw driver shaped’. The bulbous crown is described as ‘barrel shaped’ Hutchinson’s Incisors **[20]**.The first description of the characteristic defect of permanent first molars was given by Henry Moon, Dental Surgeon; He described these teeth as being small and dome shaped, with cusps set closer together than normal. The crowns are widest at the base and the narrowest at the cusps, have no grooves running around the cusps and the crown surface is smooth. It was referred to as ‘Moon’s molars’ and in some cases as ‘bud molars’ **[2]**. different form of permanent molar defect described by Fournier in 1884 that associated with the congenital syphilis, in which there is a deep groove around the base of each cusp caused by enamel hypoplasia. He described it as ‘a smaller tooth growing out of a larger one, a stump growing from a normal crown’. The defect is clearly very different from that described by Moon and probably results from infection at a slightly different time of development **[2]**. Syphilitic canine is less frequently found than other incisor and molar defects, Jacobi further states that canines are visibly smaller and simpler than usual and exhibit no identifiable mesial canine ridge, distal accessory ridge, or dental tubercle. Canines exhibit linear enamel hypoplasia episodes on all surfaces **[21]**. Although oral manifestations of syphilis may be observed at the primary stage, they are more commonly detected at the secondary stage of the disease as multiple painless aphthous ulcers or irregularly shaped lesions with whitish edges distributed on the oral mucosa and oropharynx, especially on the tongue, lips, and oral mucosa **[22]**.

Diagnosis

The diagnosis of syphilis is generally based on clinical, microscopic, and serologic findings. The last is essential because the clinical and microscopic findings are variable and relatively nonspecific **[23]**. The serology assays requested for the patients included the venereal disease research laboratory (VDRL) test, the fluorescent treponemal antibody absorption (FTA-ABS) and treponemal assays Treponema

pallidum particle agglutination assay (TPPA) to investigate syphilis, and enzyme-linked immunosorbent assay (ELISA) for HIV and HCV; It has been shown that patients with syphilis are at higher risk of acquiring other STDs, especially HIV infection, since the syphilitic lesions are suitable sites for the virus to enter the human body **[24]**. Dark-field microscopic examination to detect spirochetes is essential in evaluating cutaneous lesions, such as the chancre of primary syphilis or the condylomata lata of secondary syphilis. However, examination of oral lesion by this method is not recommended, since another treponemal organism is normally present in the oral cavity and can confuse diagnosis **[18]**.

Treatment

Treatment of syphilis is based on stage of infection and on whether there is evidence of central nervous system involvement Treponema pallidum remains extremely susceptible to penicillin, an antimicrobial agent targeting bacterial cell wall synthesis. During more than 60 years of use, there has never been a documented case of penicillin resistance. The organism's slow dividing time (30-33 hours) requires the prolonged presence of killing (treponemicidal) concentrations of antimicrobial agents **[25]**.

Treatment of choice for primary or secondary syphilis is to two-team doses of benzathine penicillin G, 2.4 million units intramuscularly, applied one week apart, and for tertiary syphilis three to four doses. Patients who are allergic to penicillin may be treated with either ceftriaxone or tetracycline **[18]**.

Prognosis

The morbidity of syphilis ranges from the relatively minor symptoms of the primary stages of infection to the more significant constitutional systemic symptoms of secondary syphilis and the significant neurological and cardiovascular consequences of tertiary disease-causing significant morbidity and even death if not identified and treated. In addition, patients with HIV are at greater risk for development or relapse of early symptomatic neurosyphilis for up to 2 years after treatment with intramuscular or intravenous penicillin **[26,27]**.

For patients diagnosed with primary or secondary syphilis (without auditory/neurologic/ocular involvement), the prognosis is good following appropriate treatment, while patients diagnosed with tertiary syphilis, the prognosis is less sanguine. Overall prognosis for tertiary syphilis depends on the extent of scarring and tissue damage, as treatment arrests further damage and inflammation but cannot reverse previous tissue damage. Congenital syphilis is the most serious outcome of syphilis in women. It has been shown that a higher proportion of infants are affected if the mother has untreated secondary syphilis, compared to untreated early latent syphilis. Since T pallidum does not invade the placental tissue or the fetus until the fifth month of gestation, syphilis causes late abortion, stillbirth, or death soon after delivery in more than 40% of untreated maternal infections **[28,29]**.

Conclusion

Syphilis remains a public health problem worldwide despite the advances in prevention, early diagnosis and treatment of syphilis. Its symptoms mimicking other more frequent lesions in the oral cavity, going by undetected and hence remaining without proper treatment; this can delay the diagnosis and treatment favoring dissemination of the disease. For these reasons, dentists should get familiarized with the clinical manifestations of syphilis in the oral mucosa so as to play a role in the diagnosis, treatment, awareness and prevention of syphilis.

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