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# THE ASSESSMENT OF RISK FACTORS IN A YOUNG PATIENT WITH RAMPANT CARIES

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**Abstract**

Rampant caries is the most aggressive and rapidly progressing type of carious disease. The management of these patients represents one of the most challenging experiences in any dental office because of the gravity and high risk of recurrence. The early diagnosis of this condition and identification of the risk factors allows the control of the disease and avoid repetitive, inefficient and aggressive operative procedures. Besides the traditional preventive methods, the effort of the dental team should focus on making the patient aware of the individual risk factors, and change his behavior and attitude towards systemic and oral health. This is a presentation of the case of a young patient with rampant caries, which illustrates the complexity of the pathology and the multitude factors involved in the etiology of the disease.

**Key words**: *rampant caries, tuberculosis, socioeconomic status*

## INTRODUCTION

Although there are still not specific criteria of diagnosis[1],"rampant caries" is a condition that almost every practitioner has encountered during the last years. In adults this term usually defines an aggressive and rapidly progressing type of caries disease involving multiple teeth and including teeth and surfaces that are usually at low risk of caries. There are several causes behind the onset and progression of rampant caries in adolescents and young adults. In most cases the changes in psycho-social life yield dietary alterations and sometimes deterioration of hygiene. Most of these young adults cannot afford a proper treatment and the health policy related to dental treatment is not very supportive for these patients after the age of eighteen. In spite of the young age, some of these patients might be affected by systemic illnesses that they are not aware of, or try to hide because they are afraid to be rejected because of it.

The increasing number of such cases and the gravity of the lesions require that each dental practitioner should know how to assess o complete diagnosis and identify the risk factors of this condition in order to set up the preventive and therapeutic strategies able to control the disease.

The diagnosis of the patient should rely on thoroughly and systematic collection and collation of all available information provided by the patient history, risk assessment, clinical examination, radiographs and adjunctive tests.

## CASE REPORT

A 22-years old man was sent to our clinique for diagnosis and treatment by a general dentist. The main complaint of the

patient was the persistent tooth sensitivity and the unaesthetic appearance of the anterior teeth despite multiple previous attempts of restorative dental treatment. Still he was unaware of the gravity of the condition and treatment difficulties especially in terms of his own expectations and commitment to dental care. This was probably the main reason of the previous failures of dental treatment.

The medical history revealed the patient was diagnosed and treated for tuberculosis 5 years ago, during adolescence. During that period the patient belonged to a disadvantaged social group, being an adolescent immigrant grown up into a mono-parental family.

The dental history seemed to correlate to the same period. The patient described that during the acute stage of the systemic disease the teeth had changed their appearance, their shade becoming lighter. The frosty appearance was followed by increased sensitivity and brittleness. The treatment for tuberculosis lasted for 9 months. During that period the patient noted the break down of teeth, discolorations, dental sensitivity and experienced episodes of acute pain. Despite these complaints he did not attend any dental treatment until the tuberculosis was cured and he returned to Romania.

Hygiene was poor and no dental brushing had been done during a long period of time. At the moment of investigation he claimed he used to brush his teeth superficially because of the pain and gingival bleeding, only once a day in the morning. His diet was highly unbalanced at the moment of the investigation. The patient had lost his appetite during the systemic disease because of the nausea related to coughing and side effects of administered treatment. Afterwards he couldn't eat properly because of the tooth sensitivity induced by thermal, chemical and mechanical stimuli. The patient claimed that he didn't eat sweet food at all, however he used to drink acidic beverages instead of water.

Oral examination revealed several areas with leucoplakia on the tongue that could be related to mechanical irritation due to sharp margins of the caries in the posterior areas. Generalized inflammation of the gums (Loe&Silness Gingival Index scores between 2 and 3) and a thick plaque accumulation were noticed (Silness &Loe plaque index score was 2.5).

The visual examination of the teeth revealed primary and recurrent lesions, in different stage of evolution (fig. 1.a,b,c). Caries have affected all the teeth including the lower incisors which are usually immune to caries. The enamel lesions on the smooth surfaces revealed opaque areas, with rough, softer enamel that could be easily chipped away indicating active lesions, involving the full thickness of the enamel.

a

b

c

Fig. 1. Clinical appearance (a. front buccal view; b. lower occlusal view; c. upper occlusal view).

Most caries were advanced cavitary lesions exposing infected dentin. Few lesions showed soft, wet, mushy, discolored dentine which is highly characteristic for the superficial heavily infected layer in acute

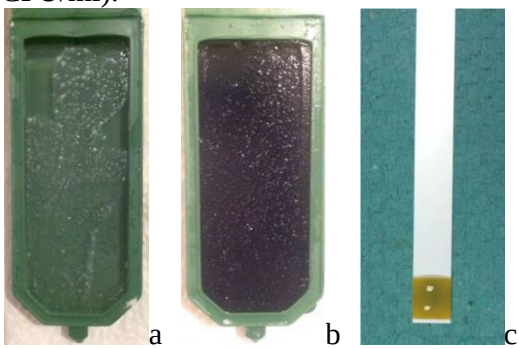
dentine caries. Instead, the large cavities exposed a brownish, leathery dentin, which suggested a slower progression of the lesion, probably because of the increased exposure to saliva during the later stages. The severity of the dental damage was more important on the lingual surfaces especially in cervical areas. This pattern could be related to previous vomiting episodes during tuberculosis and might suggest a current gastro-esophageal reflux that patient might not be aware of. All the previous restorations presented recurrent caries indicating the failure of traditional treatment of caries without controlling the etiological factors.

The clinical situation was complicated by one missing tooth (36), retained roots (25; 46), and pulpal complications. In spite of the huge destruction, most of the teeth were found vital, being highly sensitive when applying thermal stimulation and palpation. Besides the teeth that were endodontically treated (22, 25, 27, 47) only 46 and 48 were found as being non-vital, showing apical radiolucencies on the orthopantomography (fig. 3). However, the intense painful episodes reported by the patient in the past suggested pulpal complications in 18, 13, 12, 23, 24, 28, 43, 44. In rapidly progressing caries, there is a high risk of bacterial invasion of the pulp since sclerotic dentin is not produced. Therefore pulp inflammation should be considered whenever sharp pain episode occurs even for a very short period of time.

Fig. 3. Panoramic radiograph

DMF scores were calculated and the registered scores were very high (32 for DMFT and 120 for DMFS, including the third molars), which was expected as all the teeth and almost all the surfaces were affected. All the lesions were active, which was considered an indicator of the severity of the current pathology.

At the moment of the consultation, the patient had no complaints related to xerostomia. As complaining of oral dryness is not a reliable indication of diminished salivary gland function, a sialometric assessment of stimulated salivary flow was performed. Both the pH and buffering capacity were measured. Although the stimulated saliva flow rate was within normal range (1.1ml/minute), salivary pH and buffering capacity were low (pH=6.5; BC =5). CRT bacteria tests - Ivoclar Vivadent (fig. 2a,b,c) ) were used to assess the salivary level of mutans streptococci and lactobacilli. S.Mutans tested positive (>$10^5$ CFU/ml) and Lactobacili tested also positive (>$10^5$ CFU/ml).



a b c

Fig. 2. Salivary tests (a. CRT vial for S. mutans; b. CRT vial for Lactobacillus ; c. CRT indicator for buffer capacity)

Sweet Score for the assessment of the intake of cariogenic food was 35 (>15 = “watch-out” zone) and was mainly the result of drinking soft drinks.

The examination of the occlusion showed that the alteration of the vertical dimension was not significant mainly because several occlusal contacts have been preserved, despite the extensive loss of dental tissues.

## DISCUSSION

Our patient had several risk factors that could be correlated with caries. The changes of social life were related to age (adolescence) and immigrant status, both conditions resulting in high stress, inappropriate diet, poor hygiene, lack of concern for own health, and decreased access to dental and medical care.

The prevalence of rampant caries in developed countries is 1.12% while in developing countries and within disadvantaged populations in developed countries, the prevalence may reach 70% of preschool children [2]. Even without taking into consideration the socio-economical status which might be a controversial issue [3-5], emigrants are considered to be a high risk group.

Besides this, in adolescents and young adults, the changes of psycho-social factors can often be associated with modifications of diet or oral health behavior practices. These changes may result in an inadequate diet, often relying on food that is convenient, easy and fast to get. The dietary shift may become too great for remineralization factors to counterbalance the demineralization challenges. In this particular case, habitual consumption of highly sweetened carbonated beverage significantly increased the risk of developing dental caries[6]. In this case the consumption of carbohydrate drinks containing sugar and caffeine combination was another risk factor for rampant caries because of the addictive potential related to sugar and use as energizing and comforting food. Even in the absence of serious systemic disease, rampant caries is a sign of serious errors of diet. The salivary bacterial tests supported the hypothesis that diet was a major risk factor. While the counts of salivary mutans streptococci indicate the levels of bacterial colonization on teeth, being valuable predictors of caries risk, lactobacilli counts are not good for caries prediction, but they are indicator of cavitation, of sugar intake, and of oral hygiene status, being important for the assessment of patients with rampant caries.

Although we did not find any references about a direct relationship between tuberculosis and caries, we consider that several symptoms of the disease and the side effects of administered medication could be factors for significant increase of caries risk. Patients with tuberculosis may experience xerostomia and/or salivary gland swelling, with granuloma or cyst formation within the affected glands [7]. Fever, significant loses of weight and vomiting contributed to salivary deficit and decrease of the oral pH. These significant alterations of oral environment could result in rapid positive selection of acidogenic bacteria and decreased ability of defense, buffering and remineralization mechanisms.

**Conclusions**

In adolescents and young adults, the change of psycho-social factors can be associated with inadequate diet and neglected oral hygiene.

Even in young patients information about medical history and present condition may be very important for detecting systemic risk factors for rampant caries.

Immigration affects nowadays not only adults but also children and adolescences and health policies should consider these patients in terms of assessment and prevention of dental pathology.

When it comes to rampant caries, the effort of the dental team should focus not only on treating the lesions but also on the early diagnosis of this condition and identification of the risk factors involved.

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