Case history

A 34-year-old man visits the dental practice. He has not seen a dental hygienist or dentist in 2 years, because of moving and owing to personal circumstances (burnout). The right side of his jaw is sensitive. It is difficult to localize the pain as both his upper and lower jaw are slightly painful.

The patient complains about brown lesions between his incisors and cervical of his cuspids (Figs. 1 and 2). He would like a solution for his complaints.

The man works in a bakery and he is an active participant in triathlons.

Medical history

The medical history shows no complications. A week prior to inspection, the patient took antibiotics for possible sinusitis.

Dental history

In the past, the patient has visited the dentist on a regular basis. The last visit, however, was 2 years ago. The patient has visited the dental hygienist and he knows that cleaning interproximaly with interdental brushes and brushing his teeth (according to the Bass method) regularly is necessary. In the past, rinsing with fluoride has been advised.

According to the patient, maintaining proper dental hygiene is difficult under his circumstances.

Mouth inspection

The 37 is not sensitive to percussion. However, there is an active large caries lesion distolingual near the gingiva. The tooth is vital, and on the radiograph, no apical radiolucency is seen.

The patient has just recommenced oral hygiene care.

There are many restorations and caries is seen.

Questions

1 What are the factors that influence caries?

2 Which dental risk does this patient have, looking at his personal situation? Describe the possible relationship between the (social) characteristics of the patient and the situation in the mouth.

3 What are the possible reasons for the complaint?

Answers

1 The three factors which influence caries were first described in a model with three overlapping circles to illustrate the factors in the process of caries initiation by Keyes and Jordan (1963). Since then, the following factors have been added: time, fluoride, saliva, and social and demographic background. When one of these risk factors increases, the specific circle will become larger and thus demonstrate the increased caries risk and vice versa (1).

Fig 1. Frontal view.

Fig 2. Occlusal view.

The different risk factors have been extensively researched as has the interaction between the different factors. It is useful to know these factors, to be able to put them in the right perspective and to communicate them to the patient.

The amount of numerous types of acid producing bacteria can be determined with breeding sets, but this gives no information about the location of the bacteria. Mutans streptococci is an established etiologic agent for caries, and its presence clearly indicates the potential for cariogenic activity. However, its presence alone is no more than weakly predictive of clinical caries activity (1, 3).

It is difficult to give nutritional advice as the specific cariogenicity of the foodstuff is uncertain. The frequency of food intake is more important (1).

The speed with which a food or beverage clears from the mouth has been associated with its potential cariogenicity: slow-clearing foods are thought to be more cariogenic. Consumer perception about sticky foods can be different; a caramel did not remain in the mouth as long as cookies and potato chips (1, 2).

Regular brushing of tooth surfaces using a fluoride-containing dentifrice reduces caries risk. (1, 4) In the NIH Consensus Statement on Caries Diagnosis and Management Throughout Life (2001) it has been written that, conversely, inadequate exposure to fluoride confers increased risk. Conditions that compromise the long-term maintenance of good oral hygiene are also positively associated with caries risk. These include certain illnesses, physical and mental disabilities, and the presence of existing restorations or oral appliances. Research has shown that the relationship between caries and tooth brushing among adults aged 18 and over is quite small. It seems unclear whether the effect of hygiene practices is the result of increased fluoride application because of more frequent and effective tooth brushing or whether the effect is because of plaque removal (3).

Low indices of socio-economic status have been associated with elevations in caries, although the extent to which this indicator may simply reflect previous correlates is unknown. It seems evident that a low socio-economic status is also associated with reduced access to care, reduced oral health aspirations, low self-efficacy, and health behaviours that may enhance caries risk. It is clear that the caries risk of this patient is difficult to determine as many factors have to be taken into account (1, 4).

2 The patient works in a bakery. The increase of caries incidence has been observed in workers who have frequent contact with flour or sugar dust, i.e. in millers, the workers of sugar refineries, confectioners, bakers and workers of the fruit industry (debris).

In Germany, for example, if the labial surfaces of a baker's teeth are attacked by caries, this will be accepted to be a result of his occupation by German laws, although it is only based on suppositions. The results of investigations showed, however, that bakers do not have more caries of this pattern than the rest of the population. The DMFS-score, on the other hand, is somewhat higher by bakers over 30 years of age (4, 5). A study in Israel has shown that the mean DMFT values recorded for sweets industry workers were significantly higher than those recorded for the control group. Significantly higher mean DMFT values recorded in the production line workers, as compared with the non-production line workers, in the confectionary industry were assumed to be attributed to a higher consumption of sweets and closer exposure to sugar dust. Mean DMFT values were found to increase significantly in relation to the duration of exposure to the effect of carbohydrates in both groups of workers in the sweets industry (6). Oral health promotion should therefore also be integrated with existing occupational health services to improve oral health in industrial populations (7). In this case the patient must be given the information that his work can influence his oral health. Wearing a mask during his work might lower the risk of caries.

The patient likes to participate in triathlons. This could be an indication of frequent use of sport drinks. Sports drinks commonly contain citric acid. All acids have an erosive potential but the method of drinking will influence whether or not those acids affect the teeth. Sports drinks should be consumed as quickly as possible, preferably with a straw and not be held or swished around the mouth. Retaining drinks in the mouth will only increase the risk of erosion. This patient does not suffer from erosion, so the main focus should be the possible cariogenic effect of the sports drinks (1). A dietary assessment is indicted for this patient to identify the oral health risks. The patient can be advised to use products with non-cariogenic sweeteners (3). The patient could use xylitol chewing gum and rinse his mouth during the day with fluoride. Next to that rinsing with water regularly can be advised.

There are several options for caries management:

(a) Acidulated Phosphate Fluoride gel (APF) could be applied 1–2 times a year (evidence for that is consistently positive).

(b) There is also positive evidence for the benefit of applying fluoride varnish.

(c) The use of chlorhexidine gels has also shown to be effective, however, its effectiveness is often proven in combination with other preventive measures (3).

(d) Sometimes, it is advised to rinse twice a day after caries control and remove all foci of infection (with a 15 ml rinse).
(e) The patient can also apply fluoride toothpaste at least 1 min, twice a day.
(f) Fluoride varnish is recommended for adults and for root caries.

A combination of the different interventions seems to be more effective!

The data for an antimicrobial approach are still inadequate to support antimicrobial treatments (3).

His oral hygiene is not up to par at the moment as a result of various reasons. An oral health plan for this patient should include his motivation and his wishes and needs. However, the need for patient adherence is obvious.

3 The tooth is vital, not sensitive for percussion and there is no radiolucency. The most logical explanation is that the pain is a result of his sinusitis. If this is the cause his complaints probably will disappear after healing of the sinusitis. The cavity can cause pain and irritation of the pulpa and needs to be treated. After treatment, the sensitivity will disappear if the lesion was the reason for the sensitivity.

The vague pain in the jaw could also be the result of grinding and bruxism. Bruxism may reveal ongoing stress in normal work life (8). The patient has a past history of stress, and therefore, the dental hygienist has to check if these predisposing factors cause bruxism or grinding.

References

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