

Changes in oral cavity during period of intensive vomiting in patient with somatoform autonomic dysfunction – description of the case

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Summary

Introduction. The most important endogenous causes of erosion are eating disorders, gastro-oesophageal reflux (GERD), alcoholism and syndromes involving lowered saliva secretion.

Aim. The aim of this work is to study a patient with symptoms of somatoform autonomic dysfunction, in which significant erosive loss occurred through chemical influence of gastric acid on oral cavity.

Methods. Seventeen years old girl was sent to Department of Child and Adolescent Psychiatry due to persistent nausea and vomiting, which occurred over a period of about 10 months. Because of this she was repeatedly admitted to a paediatric hospital. Nausea and vomiting led to fear of going out of the house and of being in public places. In addition dental clinical examination was performed.

Results. Somatoform Disorders, during which there has been intense vomiting, can be seen as an unusual example of purging-type eating disorders. Erosion of enamel was the most common. In examination of oral mucosa, keratinisation, tongue covered with removable coating and exfoliative cheilitis associated with drying and cracking of lips, were detected.

Conclusions. Observed erosion of teeth and changes in macroscopic construction of oral mucosa seem to be symptoms caused mainly by induced intense and prolonged vomiting. Those changes may be a serious problem not only for the patients' health but also for their

aesthetics. The described case of patient with intense and long-term vomiting indicates the need of multidisciplinary medical care, including systematic dental assessment.

Key words: somatoform disorders, oral cavity

Introduction

Irreversible loss of the tooth's hard tissues, caused by an unphysiological process of chemical dissolving of enamel, cement and dentine without bacteria activity (erosion), becomes an actual problem in today's dentistry [1]. Its course is different for every patient and depends on intensity of the intra – and extracorporeal factors activity. The most important endogenous causes of erosion are eating disorders, gastro-oesophageal reflux (GERD), alcoholism and syndromes involving lowered saliva secretion. Among exogenous factors influencing dissolving of tooth's hard tissues are: acidic diet, medication, environmental factors and incorrect hygienic habits [1–7]. Due to erosion, deepening of destruction of tooth's hard tissues may occur in the form of abrasion (mechanical pulverising of teeth surface by contact with a foreign object) or abfraction (non-carious cervical lesions). In period of development, teeth are especially endangered to afore-mentioned changes because of their construction, immaturity of enamel mineralisation, and presence of enamel malformations or malocclusions [8, 9].

Aim

The aim of this work is to present a case study of a patient with symptoms of somatoform autonomic dysfunction, in which significant erosive loss occurred, through chemical influence of gastric acid on oral cavity.

Case study

Psychiatric history and evaluation of mental health

Seventeen years old upper secondary school student was sent to Department of Child and Adolescent Psychiatry of the Poznan University of Medical Sciences due to persistent nausea and vomiting, which occurred over a period of about 10 months. Because of this she was repeatedly admitted to a paediatric hospital. For the first time, the patient vomited after occasional consumption of alcohol. After this incident nausea and vomiting occurred more frequently, but were not related to food and use of psychoactive substances. However, later vomiting also occurred after meals. The patient stated that during this time she often felt nauseous and forced vomiting in order to feel better. Two months before the stay at the psychiatric department the symptoms intensified and in addition, the girl started to limit her meals and lost 13 kg (from 83 to 70 at height of 166 cm) as a result. The patient was worried about her symptoms, loss of body weight, and said that she would like to gain weight. Nausea and vomiting led

to fear of going out of the house and of being in public places. The patient was afraid of how others would react to her ailments. She also limited contact with her peers. Symptoms intensified a few months before her brother's long-planned wedding with his long-term partner, with whom the patient lived.

Patient was born from a third, uncomplicated pregnancy, at full-term through natural delivery. Birth weight was 4,500 g and scoring in Apgar scale in 1 minute – 9. Psychomotor development was appropriate. Serious diseases like head injuries, compulsive spasms, convulsions or bedwetting did not occur. Girl claimed that she used alcohol only occasionally, and that she did not get drunk and denied the use of psychoactive substances. She had not been treated psychiatrically before. Her mother's brother hanged himself – he also was not treated psychiatrically and did not use drugs.

She accommodated well both in pre-school and school period and had good contact with her peers. Educational problems only appeared in her last school year due to multiple hospitalisations. For the last 5 years, her older brother was her legal guardian. Her parents died due to somatic diseases – her mother when the patient was five and her father two years later. Patient's older sister lived separately with her own family.

During the first interview, the patient vomited multiple times with substances tinted with bile. In the examination dry, pale and cold skin and excessive hair (which were dry and brittle) loss were noticed. Skin on neckline and back was covered with a small maculopapular-vesicular rash. Her throat was reddened, and the tongue had white coating. In the area of the epigastrium abdominal tenderness was noticed. No abnormalities in a neurological examination were detected. Head magnetic resonance (MR) did not show any deviations, however, neck MR showed slightly slipped disks in C5/C6 spinal segment, but this did not put pressure on spinal cord. EEG record had low voltage, series of slow and sharp waves from frontal area, HV and RB did not intensify changes. Multiple laboratory tests of venous blood like blood count, gas analysis, electrolytes (Na, K, Cl and ionized Ca), creatinine, urea, bilirubin, ALAT, TSH, fT3 and fT4 as well as urine test did not show any important deviations. Glucose level, measured at the beginning of hospitalisation, was equal to 122 mg/dl and after two weeks it was 109 mg/dl. Slight increase of AST up to 68 IU/l (norm 35 IU/l) and of uric acid up to 9 mg/dl (norm up to 6.6 mg/dl) was observed. Gastroscopy conducted before hospitalisation revealed gastritis that did not explain the observed symptoms. Because of the frequent vomiting, a number of medications were prescribed including: Torecan with dose up to 13 mg, Fenactil up to 50 mg, Hydroxyzine up to 25 mg, Relanium up to 5 mg, Metoclopramid up to 10 mg and Polprazol. Patient was also included in psychotherapeutic therapy – both individual and group.

At the beginning of her hospitalisation, the patient was oriented in time, place and situation, maintained good contact, and was in a depressed mood. Patient stated that she was nauseous, and vomited a few times a day (sometimes forced), she spoke about fear of the future, loneliness, being left with no one to take care of her and

fear of adulthood. Patient fully accepted the necessity of increasing the volume and caloric content of her meals, gaining more body weight and did not manifest fear of weight gain. Her way of thinking was correct; she did not express any delusional content, and denied disorders of perception as well as suicidal thoughts and intentions. Her vigour was exempt. During 6 weeks, gradual improvement of mental state was achieved; the patient did not report any somatic complaints, did not vomit, she was cheerful and maintained good contact with other patients. Based on a conducted interview and the observed clinical symptoms, somatoform autonomic dysfunction was diagnosed. With a recommendation of further individual psychotherapy and intake of Fenactil 40 mg/g in dose of 20 drops per day, the patient was discharged to her home.

Oral examination

In addition patient was examined at the dental clinic by the same dentist. Dental interview showed that patient brushed her teeth two times a day; however, she did not apply any other hygienic or preventive procedures (exogenous fluoridation, flossing, fluoride rinse). Patient reported hypersensitivity of all her teeth during brushing and eating. Patient was aware of losses of hard tissues in the oral cavity that occurred as a result of vomiting. During dental examination numerous enamel losses, not caused by caries, were discovered on all buccal surfaces as well as on the tongue and palatal areas. Clinical image of losses could be associated with erosive type. The surface of the upper teeth was characterised by total loss of enamel and exposure of the dentin. Surface of lower teeth kept remains of enamel on lip and tongue areas (Figure 1 and 2). Macroscopically, teeth surface was characterised by smoothing of microstructures of enamel, dulling of surface, increased translucency of the cutting edges and in case of back teeth – rounding of nodules. Wide erosion losses were limited by a margin of healthy enamel near the cervical border. On the surface of the chewing teeth, depressions and erosion wells were present. Occlusal level was deepened by abrasion of incisor edges and nodules of back teeth. Reduced thickness of enamel, and thereby its increased translucency, showed carious losses in contact surfaces of upper teeth in frontal section from canine to canine (Figure 3).

In examination of oral cavity mucosa, exfoliative cheilitis associated with drying and cracking of lips was detected. Tongue was covered with white, removable coating. Keratinisation in the form of linear thickening (linea alba) was noticed on mucous membrane of the cheeks in the projected line of occlusion of posterior teeth.

Discussion

For the first time nausea and vomiting occurred in a patient after occasional, excessive consumption of alcohol. In the following months the frequency of vomiting increased. Also the nature of the symptoms has changed, the patient began to provoke



Figure 1. Non-carious loss of enamel structure on the labial surface of upper incisors caused by permanent vomiting (perimolysis)



Figure 2. Non-carious loss of enamel structure on the labial surface of lower incisors caused by permanent vomiting (perimolysis)



Figure 3. Carious loss of tooth structure on the palatal/interproximal surface of upper incisors

vomiting to reduce nausea. The symptoms were often associated with meals. Gradually, the patient began to fear the emergence of ailments, because of this she limited amount of food products, so there was a significant loss of body weight (within two months, more than 15% of initial body weight). The patient also withdrew from social contact because she was afraid of symptoms occurrence and possible reaction of other people in case of vomiting. Patient discomfort was related to her brother's decision to legalise his long-term relationship. Girl before the age of 12 lost both parents. It was her brother who undertook the care of the younger sister, which recently was also attended by his girlfriend. The planned change in her brother's marital status could undermine the patient's sense of security; fear of losing a loved one reappeared, although she still had to live with her brother. From her brother's perspective, nothing would change. The patient began to fear of the future, of loneliness, of "being in the background". The emergence and worsening of symptoms, on the one hand were an expression of her suffering, on the other hand provided the additional pain (multiple stays in hospitals, unpleasant diagnostic tests). It can also be assumed that aggravated and for a long time unexplained ailments provided the patient with care and attention of the loved ones, and at the same time could be an attempt to stop the changes in the family system. Symptomatic use of pharmacotherapy, but above all individual and group psychotherapy contributed to a gradual improvement in the mental state of the patient. Initially, doctors focused on understanding the causes of somatic symptoms, and then on the psychological ones. Unfortunately oral health was evaluated only

in the second part of the diagnostic and therapeutic process. As a result of intensive vomiting, in oral cavity of the patient changes similar to ones that can be observed in patient with purging type of eating disorders occurred. Most common change in patients with purging type of eating disorders is erosion of enamel [10–13]. Nowadays, various scales that compare results of clinical research on teeth erosion are used. Difficulties in their comparison result from a lack of unified criteria of assessment of severity and localisation of changes [14]. Results of research show that among the healthy population, frequency of teeth erosion in developmental age is from 7.6% to 9.5% [15–18]. According to Roberts and Li, as well as Simmons, at least 30% of patients with erosion can be clinically diagnosed [19]. In Robb and Smith's research, the total amount of tooth surface with erosion within enamel was 18.32%, whereas in comparison with group consisted of healthy people it was 4.65% [20]. Location of erosion losses on upper palatal surfaces of the teeth, prove mostly the influence of vomiting and lack of protective activity of saliva. This was described in 1939 by Holst and Lange as "perimyololysis" [21]. Consuming low pH foods and beverages causes erosion changes on occlusal, labial and buccal surfaces [21, 22]. Numerous in vitro research initiated by Davis and Winter, proved increased abrasion of enamel and dentin, which was preceded by exposure to acids. After removing the acid from enamel or dentine surfaces, area of lowered level of hardness from 0.1 to 0.2 μm is formed. This can be easily damaged even during brushing with toothpaste without abrasive ingredients [23–27]. Results of laboratory research show that causes of erosive abrasion should be traced back to an acidic diet and abrasive method of tooth brushing. It is likely that teeth erosion on lip and palatal areas highlights an insufficient protective role of salivary pellicula, unfortunately, unequally covering teeth surface. Saliva creating protective film on teeth, has the lowest thickness and mobility in lips and palatal areas. Therefore, if pH in these areas is lowered to a value that starts the process of demineralisation, lowered mobility of saliva allows longer contact of palatal areas with erosion factor. In addition, in terms of access, palatal surfaces of frontal teeth are one of the most difficult to brush, which is why effectiveness of hygienic treatment in this part of oral cavity is lowered. Saliva plays a key role in the formation of oral cavity environment. On one hand, salivary flow mechanically flushes acids (so called salivary clearance), on the other hand – it neutralises acids through its own bicarbonate, phosphate and protein buffer systems [28–30].

Increase of erosion is dependent on how long the disease lasts, or on harmful behaviours. In the study of eating disorders it was shown, that after a period of 6 months after symptoms occur, first signs of tooth loss may occur [14, 31, 32]. Milošević and Dawson [14] suggest that it is highly likely, that over the threshold of 1,100 episodes of vomiting (period of 3–5 years) chemical dissolving of tooth tissues will occur in the form of erosion. Still, it is a subject of discussion, how many episodes can cause pathological erosion of teeth. In case of presented patients, this period was significantly shorter.

Acidification of the environment of the oral cavity, lowering resistance of tooth's tissues, predisposes occurrence of dentine hypersensitivity, which often appears with enamel erosion, however it does not have to be co-dependent [33, 34].

In our patient caries was also noticed. Data from epidemiological research that determine the relationship between erosion and caries are still ambiguous. Both diseases have multifactorial aetiology, however, in caries base role in formation of tooth loss belongs to bacteria, whereas in erosion, the most important factor is acid. Low pH diet and lowered salivary properties are the common risk factors for both entities. Due to a lack of adhesion of bacteria to dissolved enamel, erosive losses are located on the teeth surface that is uncovered with plaque, often in people with good oral hygiene. The lack of a connection between erosion and caries was confirmed among a population of children aged 13–14, however, according to many researchers this issue needs further research [35, 36].

In our patient, changes of the oral mucosa were also noticed, which are likely caused by the compensatory effect of many factors including: long-term vomiting (10 months), daily imbalance in oral pH, mechanical and chemical stimulation of oral mucosa, xerostomia, shortages in macro – and microelements, as well as anxiety and stress that accompany the basic disease [36, 37]. Exfoliation of the mucous membrane of the lips may be, among other things, a consequence of dehydration and lowered saliva secretion, shortages of nutritional microelements (including vitamins of A and B groups) connected to periodic fasting and a result of parafunction in the form of biting lips because of stress. Teeth clenching and biting of soft tissues of the oral cavity is the answer to long-term stress tension, as evidenced by linear thickening of buccal mucosa in the line of occlusion. Presence of white coating on dorsal surface of the tongue proves patient's hygiene negligence, as well as the frequency of vomiting. Increase in the volume of coating may be connected with lowered salivary secretion and fluctuation in oral pH, as well as with possible fungal and bacterial infections [38, 39].

Conclusions

In the literature, one can find numerous references to changes in oral cavity of patients with eating disorders, however, there are very few publications considering other mental disorders [40].

Observed erosion of teeth and changes in macroscopic construction of oral mucosa seem to be symptoms caused mainly by induced gastro-oesophageal reflux. Those changes may be a big problem not only for the patient's health but also for his/her aesthetics. The described case of patient with intense and long-term vomiting indicates the need of multidisciplinary medical care, including systematic dental assessment.

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