

The possible correlation between the chronic esophageal achalasia and periodontal disease – a pilot study

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Abstract. – OBJECTIVE: Achalasia is a very rare disease characterized by the lack of motor coordination in various phases of contraction-relaxation of esophageal muscles. The aim of the study is to determine the correlation between esophageal achalasia and oral diseases.

PATIENTS AND METHODS: Thirteen esophageal achalasia patients were assessed for the presence of any potential oral symptoms through a questionnaire. 5 volunteered to be included in the study. The oral health status of these 5 patients was assessed by a clinical oral examination. The oral health status of the included cases was compared to the oral health status data from a published observational study on healthy individuals belonging to the same (Italian) population.

RESULTS: Our results show that the number of periodontal pockets with Probing Pocket Dept > 4 mm is significantly increased, compared to the average of the Italian population; the Bleeding On Probing (BOP) is not related to the Plaque Control Record (PCR); so we can say that the value of periodontal index is not correlated with the value of oral hygiene index.

CONCLUSIONS: Considering the limitations of a research based on small numbers, it nevertheless seems advisable to assert that there is a correlation between esophageal achalasia and periodontal disease.

Key Words:

Achalasia, Periodontology, Oral health.

Introduction

Achalasia is a very rare disease, with an incidence of 0.6/100 000 per year, and it is characterized by the lack of motor coordina-

tion in various phases of contraction-relaxation of esophageal muscles. In achalasia, the lower esophageal sphincter is hypertensive and show impaired relaxation in response to swallowing¹. The etiology of the disease remains elusive². Idiopathic achalasia is associated with the formation of autoimmune processes or genetic factors³, but also achalasia may be a manifestation of Chagas disease, caused by *Trypanosoma cruzi* infection⁴. The numerous symptoms reported in achalasia include dysphagia, chest pain, heartburn, chronic cough, and choking. The symptoms can largely be attributed to the emesis of esophageal content (gastroesophageal reflux). The regurgitated content could potentially induce local pH changes, reduced salivary flow and predisposes the oral tissues to plaque formation and inflammation which on long term can potentially result in periodontal diseases. Some symptoms of achalasia and GERD overlap each other, and it is still controversial whether these conditions co-exist or whether one disease transforms into the other⁵. Lack of smooth muscle motility can cause problems in other parts of the gastrointestinal tract and due to frequent discharges of food into the oral cavity, it can lead to significant changes in the environment inside the mouth⁵. Despite performing surgical procedures as Laparoscopic Heller myotomy (LHM), pneumatic dilatation (PD) and peroral endoscopic myotomy (POEM), the patient remains under observation and with high-risk patient in terms of gastrointestinal motility problems.

The aim of the study is to determine the correlation between esophageal achalasia and oral diseases.

Patients and Methods

Thirteen patients diagnosed with esophageal achalasia for at least 5 years were assessed for the presence of any potential oral symptoms through a questionnaire. Out of the 13 patients, only 5 volunteered to be included in the present study. The oral health status of these 5 patients was evaluated with clinical oral examination. The oral health conditions of the included cases were compared to the oral health data from a published observational study on healthy individuals belonging to the same (Italian) population⁶.

Survey's questions were about the actual or the past presence of various dental diseases, such as caries, gingival bleeding, gingival pain, dentinal hypersensitivity, erosion of the enamel, halitosis.

The study was approved by the Local Ethical Committee (n. 0000209). Informed consent was obtained and signed from all the study participants. All the procedures were in accordance with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. All patients selected for this study were recruited as voluntary from an Italian association called "AMAE Onlus" (Associazione Malati Acalasia Esofagea – Italian Association of patients with Esophageal Achalasia).

The inclusion criterium to enter in the study was being a collaborating adult with esophageal achalasia for at least 5 years.

All visited patients showed signs and symptoms of periodontal disease.

The visit consisted of intraoral and extraoral clinical examination, orthopantomogram x-ray, periodontal chart, scaling, personalized instructions of oral hygiene.

Results

All the main problems, most frequently complained by the patients themselves, are listed in the Table I. All patients were asked to assess the quality of life by marking the appropriate value on the VAS scale and to determine the impact of the disease on that quality. Their answers showed that their pathological mouth conditions significantly reduced their quality of life and hindered everyday existence.

All examined patients (5 in total) showed no caries, good oral hygiene but high levels of gingival inflammation associated with probing pocket depth higher than 4 mm. Periodontal examination's results can be found in Figure 1 and Table II.

The Student's *t*-test for hypothesis testing on average values with the level of significance $\alpha=0,05$ was used to verify the reliability of the results regarding both the prevalence of periodontal disease in achalasia subjects compared to the Italian population⁶ and estimating the correlation between BOP and PCR in examined subjects. It can be asserted that the number of periodontal pockets with probing > 4 mm is significantly increased compared to the average of the Italian population, found in extensive cross-sectional studies in northern Italy⁶. In addition, BOP is not related to the PCR, for this reason the value of periodontal index is not correlated with the value of hygiene index (Figures 2, 3, 4, 5).

Discussion

There is not much literature about achalasia as the factor forming and accelerating pathological

Table I. The major pathological symptoms in the oral cavity of the patients suffering from esophageal achalasia.

Type of complain	Presence of the disease (%)
Gingival bleeding while brushing teeth	62%
Esophageal reflux disease 31% (at least once a week)	31% (everyday)
Xerostomia	53%
Dental hypersensitivity	52%
Frequent, chronic halitosis	47%
Strong, frequent pain of the gingiva	23%

Table II. The results of intraoral examination – there is no correlation between BOP and PCR.

Patient	BOP	PCR	Caries presence
1	52%	24%	No
2	31%	21%	No
3	32%	23%	No
4	43%	52%	No
5	72%	76%	No

processes inside the mouth. Moazzez et al⁷ found the significant presence of the erosion of hard tissues in patients that were suffering from achalasia, especially on the palatal surfaces of the upper teeth, which suggest that etiology was caused by gastric juices' regurgitation, and consequently, this means that particular attention to their oral health should be focus right after achalasia diagnosis. Another study also associates digestive motility problems with pathological changes in oral cavity⁸.

Although patients' oral hygiene was satisfactory and caries were not found, the high value of BOP, is clear and there was objective sign of periodontal disease⁹. So, the everyday oral hygiene cannot be the major factor causing gingival bleeding.

All the study's patients had undergone surgery before this study. Although after the surgical treatment the major symptoms decreased and quality of life increased, it is believed that one method (Peroral endoscopic myotomy – POEM)

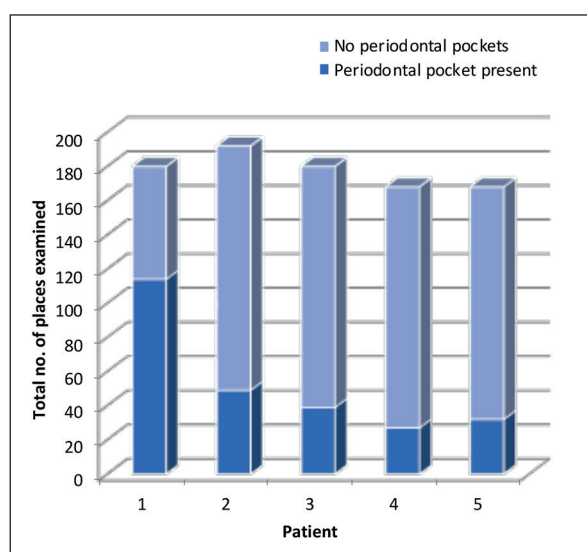


Figure 1. Distribution of the number of pockets relative to the total number of places examined in all patients.



Figure 2. Intraoral photography of a 30 years old woman who has been suffering from achalasia for 13 yrs. - en face.

increases the risk of GERD, which can cause periodontal problems^{7,10}. It has also been proven that GERD can cause dental erosion^{7,11} and oral soft tissue disorders¹¹. Song et al¹² have shown that patients with GERD have a significantly higher risk of having chronic periodontitis. GERD can also aggravate the symptoms that appear. According to the authors, the crucial effect of GERD is a reduced level of salivation, which promotes plaque formation and, as a result, facilitates inflammation in the periodontal area¹².

Evaluating patients' questionnaire, it can be asserted that the symptoms as xerostomia, den-



Figure 3. Intraoral photo of same patient from right angle.



Figure 4. Intraoral photo of same patient from left angle.

tal hypersensitivity or halitosis are often severe and unpleasant oral manifestations of different disorders of esophageal motility^{8,11-14}. Combined with the results of an objective study, this shows the definitive impact that chronic achalasia has on mouth's soft tissue. It has been indicated that the condition of soft tissues can drastically change the results of the therapy, that the patient should undergo. When creating a new scale enabling estimation of the success of prosthetic therapy after dentofacial traumas, it is suggested to consider the condition of soft tissues as a subjective element of evaluation. This can alter the importance of all the other parameters, and it definitely hampers rehabilitation in case of chronic irritation factors¹⁵.

Conclusions

This pilot study presents a too exiguous sample size of cases; it is necessary to extend the study at more esophageal achalasia patients in order to obtain significative results. Taking into account the limitations of a research based on small numbers, it nevertheless seems advisable to assert that there is a correlation between esophageal achalasia and periodontal disease. Noting the results of our study, patients suffering from achalasia should be treated with periodontal care, including a special attention in explaining the etiology of this rare phenomenon. In order to obtain greater data, which can explain a lot of uncertainty, it would also be appropriate to study the differences of the

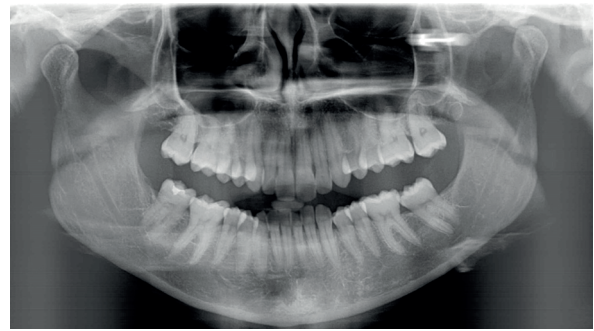


Figure 5. Panoramic x-ray of the same patient.

oral cavity in patients before and after surgical intervention.

Conflict of Interest

The Authors declare that they have no conflict of interests.

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