Study of parafunctions in patients with chronic daily headache.

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ABSTRACT

The purpose of this paper is to present the results of a questionnaire investigating parafunctions (particularly clenching and grinding). The questionnaire was elaborated by the Dental Clinic of the University of Milano and completed by 125 patients experiencing chronic daily headache and attending the Neurological Institute Carlo Besta for an inpatient withdrawal protocol to treat medication overuse related to chronic headaches. Our results showed high percentages of parafunctions, which were present in 80% of patients with chronic daily headache. We noted that patient information on possible behaviours and coexisting conditions which may be involved in the mechanisms of chronic headaches, as well as education about these factors, are crucial aspects in the management of chronic headache patients. It is important for clinicians to perform a thorough evaluation (based upon history taking and clinical examination) aimed at identifying parafunctions. Several studies showed that cranio-mandibular dysfunction (CMD) is prevalent in different headache forms, such as tension-type headache and migraine, and may have a role in their chronification. Overall, our data encourage the early diagnosis and treatment of muscular and mechanical aspects of CMD. All the diagnostic and therapeutic proposals over the years suggested that converting a dysfunctional stomatognathic system into a physiological and functional one is an appropriate and effective approach to the treatment of headaches. The achievement of a good muscular activity during clenching and a low activity at rest represent the main goals of our therapy. We suggest that patients suffering from chronic headaches are be evaluated as far as the need for interocclusal devices (as pointed out in previous studies of our group) is concerned, and in relation to the possible presence of parafunctions: their analysis, correction and prevention will ultimately limit their role as trigger factors or as coexisting conditions influencing the development/maintaining of headache chronification.

INTRODUCTION

The aetiology of Chronic Daily Headache (CDH) is now accepted in literature as multifactorial. Sometimes only one factor may be present, although more frequently local or systemic factors may be present in the same patient. Predisposing factors, such as dental-facial disharmony, triggering factors such as facial trauma and parafunctions [1] associated with psychological factors can, if not corrected, result in chronic painful symptomatology of temporomandibular disorders [2].
These disorders have a wide range of symptoms [3], characterized mainly by TMJ noise and pain, functional restrictions and other symptoms such as headache, neck pain, feeling of ear plugged and tinnitus, which if not examined by a gnathologist, may confuse patients and make them seek other types of specialist advice in search of a proper treatment, thus extending the time for correct diagnosis and therapy.

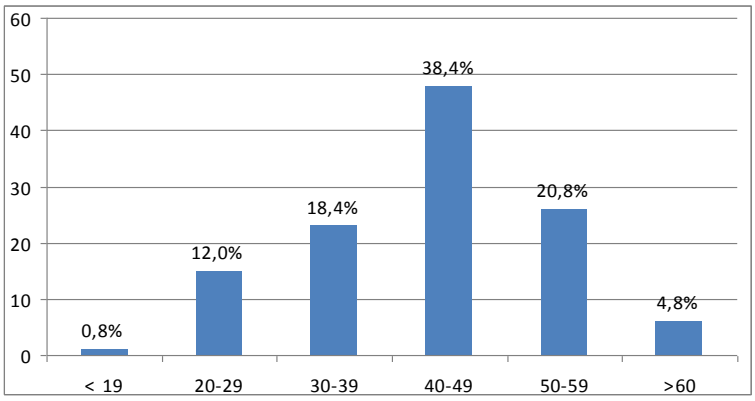
In particular, many patients suffering from CDH do not consider the possibility that their headache may be associated with problems such as TMD and do not inform the dentist about such a situation. [4 – 5]
The aim of this work is to investigate chronic headache and parafunctions to evaluate possible links between them.

MATERIALS AND METHOD
Two groups of patients were identified:
the study group is composed by 125 patients, 105 females and 20 males, with average age of 42.41 (ranging between 18 and 63, std dev 10.47), with the following inclusion criteria:

- Chronic headache
- TMJ pain and headache
- TMJ noise and headache
- palpation tenderness of masticatory muscles
- difficulty in chewing or opening their mouth wide.

As far as the different age groups are concerned, see

Table 1



The control group is composed by 75 patients, 50 females and 25 males, with average age of 41.2 (ranging between 19 and 65, std dev 11.7) and it is characterized by the following:

- homogeneity in terms of age and sex
- no headache, facial or temporomandibular pain
- no previous gnathological treatments.

One hundred and twenty-five patients with Chronic Migraine and Medication overuse attending the Neurological Institute Carlo Besta Headache Center for an inpatient withdrawal protocol to treat medication overuse related to chronic headaches were selected. All the patients fulfilled diagnostic criteria for Chronic Migraine and Medication overuse according to I.C.H.D. III beta. All of them

filled in a specific medical questionnaire elaborated by the Dental Clinic of the University of Milano, focusing on parafunctions, particularly clenching, grinding and bad habits such as chewing gum for a long time.

The relationship between headache and parafunctions was evaluated using the Chi-Squared Test.

RESULTS

Table 1	SAMPLE GROUP Headache	%	CONTROL GROUP No headache	%
TOT	**125**	**100**	**75**	**100**
Both parafunctions	55	44	24	32
Grindind only	13	10,4	3	4
Clenching only	32	25,6	12	16
No parafunction	25	20	36	48

The Chi-Squared Test is performed in order to compare the role of the parafunctions on the development of the "headache" symptom in the two study groups, the cephalalgical sample group and the control group. The tests showed the following results:

- hypothesis of independence of the "grinding" cause on the "headache" effect: hypothesis rejected; the alternative hypothesis of cause-effect relationship between grinding and headache is accepted with a level of confidence equal to 97.5% (p:0.01).
- hypothesis of independence of the "clenching" cause on the "headache" effect: hypothesis rejected; the alternative hypothesis of cause-effect relationship between clenching and headache is accepted with a level of confidence equal to 99% (p:0.002).
- hypothesis of independence of the "parafunction" cause on the "headache" effect: hypothesis rejected; the alternative hypothesis of cause-effect relationship between parafunction and headache is accepted with a level of confidence equal to 99.9% (p:0.01).

One hundred (80%) out of the 125 patients showed parafunctions: n=55 (44%) displayed clenching and grinding, n=32 (25.6%) clenching, n=13 (10.4%) grinding.
In addition, 60 patients (48%) also reported chewing gum for a long time. Graphic 2

Table 2 illustrates symptoms most frequently reported by patients

Table 2	**nº**	**%**
Clenching	87	69,6
Grinding	68	54,4
Chewing gum	60	48
No parafunctional activities	25	20

DISCUSSION

Parafunctions that may involve stomatognathic system are in its "dynamic form" grinding and in its "static form" clenching. Sometimes one patient may be a "pure" grinder, other times only a clencher, other times the same patient may present episodes of clenching and grinding.
These parafunctions are a psychophysiological disorder that can be defined as a 'diurnal and / or nocturnal parafunctional activity which leads sufferers to clenching and / or grinding teeth unconsciously (Mohl et al. 1988). Nocturnal bruxism was defined by the American Sleep Disorders Association (ASDA), in its International Classification, as a "stereotyped disorder characterized by grinding or clenching your teeth during sleep" (Thorpy 1990). The prevalence of bruxism in the general population ranges from 8-21% if assessed with a questionnaire, and goes to 48-58% when evaluated through the clinical oral examination (Seligman et al., 1988).
There are studies in which bruxism and other parafunctions are associated to the onset of cranial and facial ATM pain [6] (Tao et al. 1994a, Molina et al. 1997, Glaros et al.1998). The aetiology of bruxism is not completely clear. Bruxism has been suggested to be a multifactorial psychosomatic phenomenon (Olkinuora 1972) and bruxists typically experience increased levels of stress and tension [7,8,9], sleep disturbance and depression (Tao et al. 1994). At present, bruxism is considered a phenomenon of neurological activity, centrally mediated and related to sleep disorders (Lobbezoo Lavigne & 1997); the presence of a link between the regulation of circulation and the rhythmic activation of masticatory muscles, especially if associated with body movements during sleep, has also been suggested. (Sjöholm 1995)
The prolonged contraction of the muscles determines the decrease in blood flow leading muscles to hypoxia, with the consequent production and accumulation of lactic acid. This would explain, at least in part, subjective facial pain and headache history [11], besides palpation tenderness of the major stomatognathic and cranial postural muscles during physical examinations, especially in the presence of a mandibular position that would force muscles to work in conditions of asymmetry and incorrect length / trajectory [9, 12,13,14,15,16].
The prevention of exclusively nocturnal grinding can include the administration of drugs (which is valid solution also as far as clenching is concerned) such as myorelaxants and anti-anxiety drugs [17]. In this case, the application of an orthotic device or a bite can partially reduce the structural damage and may often alleviate headache as well.
In conclusion, we know that the CDH has a multifactorial origin and the present work seems to confirm that parafunctions could play a primary role.
We suggest, before proceeding with a re-balancing therapy, using an occlusal orthotic device [9,14,15,16], that patients are made aware of the centrality of their role in the therapeutic process, helping them become conscious of the bad habits (particularly the protracted chewing of gums for several hours a day) that can force both the ATM, but especially the muscles primarily responsible for the symptoms. We think that it is essential to ask patients about possible parafunctions to investigate, as well as about many other attitudes such as spending hours at the computer in non-ergonomic positions, sitting on unsuitable chairs for hours on end or talking on the phone holding the receiver between neck and shoulders.
Dysfunctional pathologies are frequently of delicate management once they become chronic and they create serious difficulties even for the most experienced doctor. Prevention, as the recent AADR'(American Association for Dental Research) guidelines also suggest, is of primary importance for a proper care of dysfunctional patients.
We therefore deem it essential for clinicians to use, in their routine, a medical questionnaire specifically aimed at detecting DCM and potentially dysfunctional patients, implementing an effective prevention in order to change bad habits and try to limit the damage of parafunctions.
The analysis, correction and prevention of parafunctions will limit their significance as trigger factors or as coexisting conditions influencing the development of a Chronic Daily Headache.

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