Study regarding the incidence of the subjective simptomatology of the tmj disorders in a sample of adolescents with dento-maxillary anomalies from constanta, treated with different types of orthodontic appliances

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Abstract. This study starts from certain observation of some clinical features regarding the subjective symptoms in connection with the specific pathology of the temporomandibular dysfunction (TMD). The observations were made on a sample of adolescent with orthodontic appliances, so that having different dento-maxillary anomalies. They had to fill in four questionnaires with closed and combined final in order to evaluate the subjective simptomatology of the potential dysfunction of the temporomandibular joint (TMJ). On the other hand it was searched for a potential correlation that might be between a sort of a dento-maxillary anomaly and the incidence of the TMD simptomatology.

Key words: **subjective simptomatology, temporomandibular dysfunction, dento-maxillary anomalies.**

Introduction

The craniomandibular disturbances represent a pathologic status characterized by a clinical polymorphism that is generated by certain local and systemic disease, which are influenced in turn by heterogenic risk factors. From J.P. Okeson and co.[1], T. Dao[2], Mc Nilner[3], Ieremia and co.[4,5,6,7,8] the etiopathogeny of TMD is given by:

- ♦ direct or indirect macrotrauma
- ♦ specific repetitive microtrauma:
  - parafunctional habits [9];
  - consequences of the occlusion interferences and premature contacts, especially those induced by iatrogenic dental interventions [10];
- ♦ dento-maxillary anomalies [11];
- ♦ consequences of some systemic diseases (rheumatoid arthritis, ankylozed spondylitis, arthritis, gout, psoriasis) upon the hard and soft TMJ's tissues (arthrogenic or myogenic dysfunction) [12, 13, 14, 15, 16].
- ♦ intracapsular disorders or disk dislocation known as internal derangements of the TMJ that produces functional impairment [17, 18, 19].
- ♦ TMD induced by permanent psychoemotional stress [20].

Objective

This study starts from clinical observation regarding some TMJ symptoms found in anamnesis of the teenagers with orthodontic appliance. Thus, the purpose of this study is to identify and evaluate the frequency of these symptoms but also the gravity of them in TMD. Also we are interest about the association of the symptoms with

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the clinical forms of dento-maxillary anomalies.

Material and method

This preliminary study has been made on a number of 50 teenagers having orthodontic appliance, 32 girls and 18 boys with dentomaxillary anomalies, they being treated in the Clinic of orthodontics and dento-facial orthopedics from the Dentistry School of Constanta. Every patient has been fill in 2 questionnaires with closed and combined final and 2 anamnesis indexes realized by Prof. Dr. Lucian Ieremia, as follows:

1. Questionnaire with combined final – for evaluation of the general status of health or disease.

2. Individualized questionnaire with closed final – for identification in adolescents the parafunctions that might be responsible to the generation of some malocclusions and TMD.

3. Codified combined anamnesis index for validation of the TMD. Every question receives a value according with the symptom gravity. The sum of the values for each patient gives the gravity of the TMD: incipient, medium or severe.

4. Anamnesis index with closed final for validate the gravity of the headache by the frequency of the painful crisis. According with the headache intensity and frequency there are four degrees of severity: incipient, medium, severe 1, severe 2.

This questionnaires and indexes belong to software realized by Prof. Lucian Ieremia. With these programs it becomes possible to establish the degree of disturbance of the TMJ and to monitor the evolution of the TMD status in all the aspects.

Results

In this sample of 50 patients it is a ratio of 2/1 for girls. This fact is due to the higher addressability of the girls to the orthodontist, probably they being more interested about physiognomy than boys (fig.1).

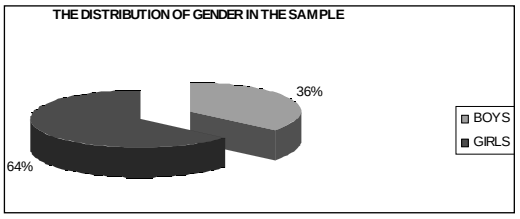

Fig. 1

We found that almost a half of patients present at least one symptom of TMD, boys and girls being in a similar proportion. There is a frequent association between the simptomatology of TMD and headache at least once per month. One half of boys and ¾ of girls have different degrees of headache (fig.2).

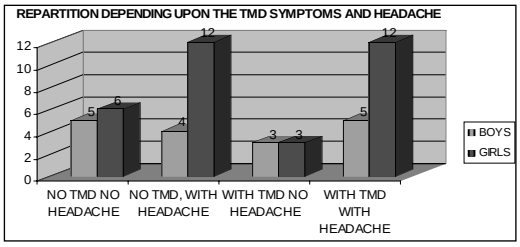

Fig. 2

In the sample with asymptomatic patients without headache, it is observed that all of them have different parafunctions, one half having centric or eccentric bruxism, and almost a quarter having different degrees of vertigo (fig. 3).

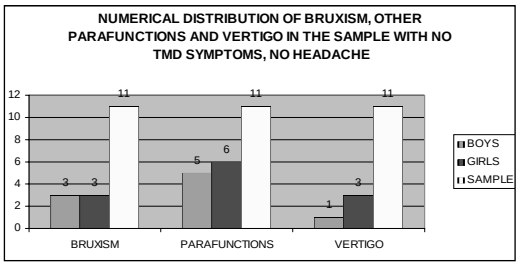

Fig. 3

In the sample without TMD simptomatology but with different degrees of headache there is a prevalence of 100% of parafunctions, but in turn the incidence of bruxism is smaller - 20%. Almost one half have different frequency of vertigo (fig. 4).

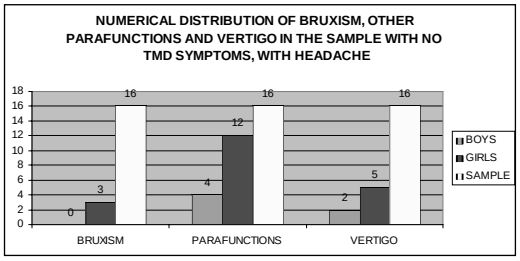

Fig. 4

One half of the patients with different symptoms of TMD have bruxism, almost all of them having parafunctions and one half having vertigo. There is an obvious association of the TMD simptomatology with the headache, almost ¾ of patients having this problem at least monthly.

Taking in consideration the symptoms of TMD we found that the most frequent symptoms are the tiredness of the masticatory muscles and the subluxation of the mandible (more than one half). The other symptoms are, in the frequency order: TMJ pain (34%), impairment of mandible mobility (30%), the last place being occupied by TMJ noises (1%).

There is no difference between boys and girls, excepting the TMJ pain were the percent of 34% is ensured only by girls (fig.5).

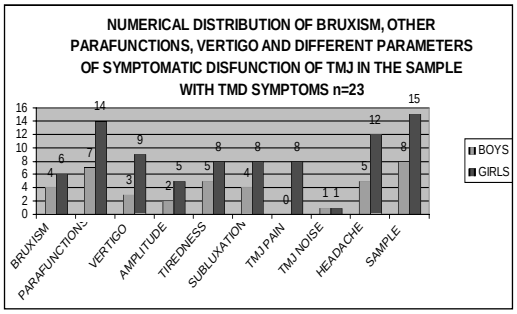

Fig. 5

Almost all the patients (96%) have different parafunctions, 66% have headache, 46% have at least one TMD symptom and vertigo and 38% have a sort of bruxism (centric or eccentric) (fig.6).

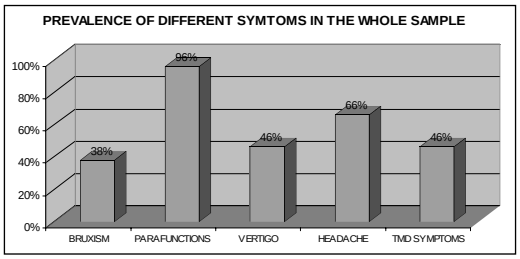

Fig. 6

The repartition on Angle classes of dento-maxillary anomalies indicates a prevalence of Class I Angle (50%), followed by Class II/1 (20%), Class II/2 (16%) and Class III (14%). We found no significant difference in the prevalence of the TMD symptoms among the Angle classes, all of them being affected in almost the same proportion (fig. 7).

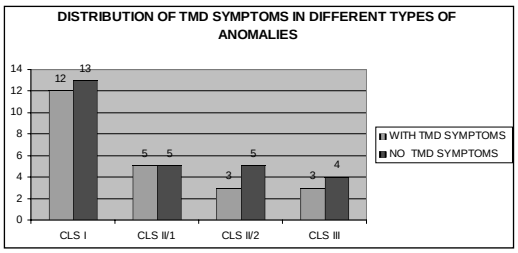

Fig. 7

Evaluating the intensity of the disturbances resulted from the appreciation of the anamnesis dysfunction index we found that most part is occupied by patients with incipient index (70%), followed by those with sever index (17%) and medium index (13%) (fig. 8).

The anamnesis index of the headache gravity appreciated by the appearance frequency shows that almost one half (47%) of patients have an incipient index, followed by those with medium index (35%) and severe 1 and 2 index (18%) (fig. 9).

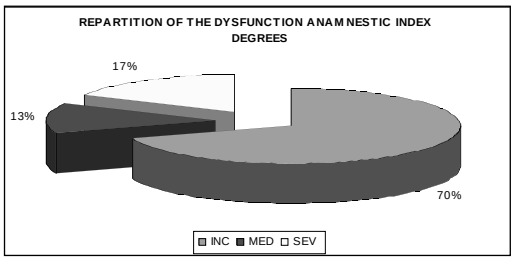

Fig. 8

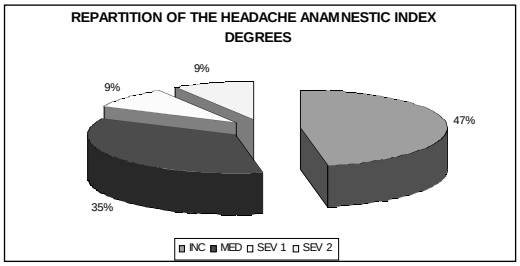

Fig. 9

Discussion

The epidemiologic researches performed by D. Grummons [21], L. Bodner and co. [22], R.C. Rodriguez-Garcia and co. [23], N. Alamoudi and co. [24], K. Wahlund and co. [25], utilizing some subjective and objective indexes emphasized the prevalence of symptoms and signs that constitute the craniomandibular pain dysfunctional syndrome as follows:

1. TMJ noises (clicking and crepitation) 60%,
2. sensibility to masticatory muscles palpation 35%,
3. impairment to opening the mouth 20%,
4. diffuse headache of facial pain 15%,
5. sensibility to TMJ palpation 10%.

Statistically it has been pointed out that 75% of investigated subjects had at least one sign of dysfunction (TMJ noises, sensibility, etc.) and almost 33% had at least one symptom (facial pain, TMJ pain, etc.).

We found that 46% of patients have at least one symptom, probably due to the fact that this sample is constituted only by subjects with dento-maxillary anomalies. The first place is taken by Class I Angle with 50%. None of the Angle Classes have a higher prevalence of TMD symptoms.

The prevalence of the TMD may reach very high values if there are included non-specific symptoms or moderate clinical signs [26]. Our study indicates the same findings because adding the specific simptomatology with the non-specific one (headache) is totalized 78%, fact that is very alarming. If the parafunctions, which may predispose or aggravate a TMD, and are taken into account (98%) we may conclude that the DTM can appear in most of the patients having a malocclusion. This facts do not take in consideration the possible traumatic occlusion induced by the occlusion interferences and premature contacts.

The frequency of the severe affections accompanied by headache and facial pain that necessitate an emergency treatment is 1-2% in children, approximately 5% in adolescents and 5-12% in adults. The joint sounds represent the most common sign but it cannot itself indicate the necessity of a treatment [27]. Unlike the studies of Bakke and Moeller (1992) in our sample the joint sounds has the smallest frequency, the first place being taken by the tiredness of the masticatory muscles, followed by arthralgia and impairments in the mandible movements.

Studies on prevalence of the signs and symptoms of TMD achieved by Rugh and Solberg [28] emphasized that the mild problems are even distributed among the males and females, but the severe problems are more frequent in females than in males and much more females look for dental services for this affection, approximately 8:1.

This preliminary study is in concordance with the above mentioned because we found that the incipient disturbances of TMD occur in more than 2/3 of the investigated patients, the medium and severe degrees having a less amount. Also, the girls prevail in the orthodontic sample.

Conclusion

Approximately one half of the orthodontic patients have at least one symptom of TMD.

One half of the patients with different symptoms of TMD have bruxism, one half have vertigo and almost all of them have parafunctions

There is an obvious association between the TMD simptomatology and headache, almost ¾ of them being affected

The tiredness of the masticatory muscles and the subluxation are the most frequent symptoms, followed by TMJ pain, impairment of mandible mobility and TMJ noises.

There are no significant differences of the symptoms prevalence in any of Angle Class malocclusions, approximately one half of them being affected.

More than 2/3 of patients have an incipient stage of the anamnesis dysfunction index.

Almost one half of orthodontic adolescents have an incipient headache anamnesis index

All of these parameters suggest that there is an important simptomatology of TMD in the orthodontic adolescents of this sample. For this reason it is very important to discover in the incipient stages the aggravating and predisposing factors of these disturbance that may have an echo in the entire human organism.

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