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Trigeminal Neuralgia – Case and Treatment Analysis at the Department of Oral Surgery of the University Hospital Dubrava

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A B S T R A C T

The aim of the study was to explore certain risk factors for trigeminal neuralgia (TN), assess the prevalence of misdiagnoses of TN made by primary care dentists, compare the treatment practice for TN at the Department of Oral Surgery with the guidelines, and the importance of interdisciplinary approach in TN treatment. The study included 237 patient records (70 men and 167 women, aged 5–91 years) referred to the Department under the diagnosis of TN. From their medical records, demographic data, referral diagnose, clinical diagnose, additional diagnostic procedures and treatment were analysed. Neuralgia of the trigeminal nerve affects predominantly elderly female population, while the impact of the season on the incidence of the disease has not been determined. The most common therapy used at the Department were blockades, carbamazepine or their combination. 63.3% patients were referred for further diagnostic tests following the first examination. The number of misdiagnosed cases referred by primary care dentists (33.6%) points that better training in diagnosing TN is needed for the dental practitioners. The treatment methods at the Department need to be harmonized with the latest guidelines on neuralgia treatment. Due to the complexity of etiological factors, an interdisciplinary approach is necessary.

Key words: *neuralgia of the trigeminal nerve, dental medicine, oral surgery, pain, epidemiology*

Introduction

Trigeminal neuralgia (TN) is a disorder characterized by a sudden, usually unilateral, brief stabbing pain in the areas of the innervations of the fifth cranial nerve[1]. This can be the first branch (ophthalmic) innervating the area of the forehead and eye, the second branch (maxillary) innervating the facial area, and the third one (mandibular) innervating the area of the mandible.

Since the pain sensations appear in the area of the head and neck, and may be comparable to dental pain by their character, the patient shall primarily consult their dentist. Precisely due to this reason dentists face a responsible task of correctly identifying the painful condition and referring the patient to a specialist. A misdiagnosis and a number of invasive dental operations may lead to the aggravation of neuralgic pain[2]. Therefore, it should be stressed that chronic neuropathic trigeminal pain is a severe condition, almost always resulting in great suffering of the affected patients[3].

The Department of Oral Surgery examines the patients referred because they suffer from pain in the orofacial area that has been classified through various diagnostic methods as neuralgia of the trigeminal nerve. Analyzing the patients treated at the Department we wanted to explore:

1. The prevalence of misdiagnoses made by primary care dentists when referring a patient to a specialist?

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2. Compliance of the treatment of trigeminal neuralgia at the Department of Oral Surgery with the guidelines in the available literature;

3. How much certain risk factors like age, sex and season affect the onset of the symptoms?

4. How likely is recurrence?

5. The importance of collaboration among various specialities due to complex etiological factors.

Materials and Methods

The study was carried out at the University Department of Oral Surgery at the Dubrava University Hospital. The already existing medical records were used, taken from the Department's files for the period from January 1, 2005 until December 31, 2009. All the patients referred to the Department as trigeminal neuralgias were included.

The data were found for all of the 237 patients included in the study, 70 of whom were men and 167 women, aged between 5 and 91 years. From their medical records, demographic data, referral diagnose, clinical diagnose, additional diagnostic procedures and treatment were analysed.

A statistical analysis was done using statistical software SPSS Statistics ver. 13.0 using descriptive statistics and a chi-square test. Results were expressed also as rates ratio (RR) with 95% confidence intervals (CI). $p<0.05$ was considered as statistically significant.

Results

The analysis of all subjects according to sex reveals a prominent dominance of the female sex compared to the male (70.5% *vs.* 29.5 %, RR=2.386, 95% CI 1.811–3.169, $p<0.001$) (Figure 1). Distribution of patients according to age shows the highest incidence of neuralgia at the age of 61 to 71 (24.5%, $p<0.001$ compared to the expected rate of 11.5%) (Table 1). Analyzing the information about the season of referral, it has been perceived that there is no significant difference between winter and summer months (24.9% *vs.* 24.5%, RR=1.017, 95% CI 0.707–1.464, p=0.926) (Figure 2).

Fig. 1. Showing analysis of subjects according to sex.

TABLE 1
SHOWING DISTRIBUTION OF PATIENTS ACCORDING TO AGE

Age of patients	Number of patients	%
Less than 10	1	0.4
10 to 20	3	1.3
21 to 30	14	5.9
31 to 40	21	8.9
41 to 50	42	17.7
51 to 60	47	19.8
61 to 70	58	24.5
71 and more	51	21.5
Total	237	100.0

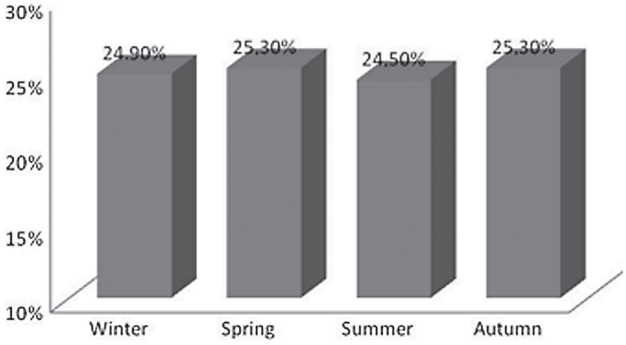

Fig. 2. Showing the information about the season of referral.

Out of the total number of patients, 170 or 71.7% of them visited the out-patient clinic of the Department for the first time. Out of this 68.2% or 116 patients were referred by primary care dentists, whereas 54 were referred by primary care physicians. What concerns the remaining 67 patients there is no data about first referral, but there is data that among 32 patients disease had recurred. For the remaining patients (N=35) statement about the visit (first or recurrent, and referral data) could not been found in their medical record.

Out of 116 patients which were referred to the Department by primary care dentists under the diagnosis of »neuralgia in observation«, diagnosis was confirmed in only 20 cases (17.2%); 29 of them were referred for further testing; the follow-up after the first examination remains unknown for 28 patients due to improperly managed records; and 39 patients (33.6%) of those referred to the Department were entirely misdiagnosed; the distribution of these patients is presented in (Table 2).

Following the first examination of the entire group of patients (237), 150 patients (63.3%) were referred for further testing; 53 patients (22.4%) were referred to X-ray, or an orthopantomogram, and a consultation of a neurologist was demanded in 31 cases (13.1%), (Table 3).

Table 4 shows the prescribed therapies at the Department. It can be seen that in 29.6% cases blockades have

TABLE 2
SHOWING DIAGNOSES FOR PATIENTS REFERRED AS NEURALGIA IN OBSERVATION

Diagnoses and procedures for patients referred as neuralgia in obs.	Number of patients (N=116)	%
Confirmed trigeminal neuralgia	20	17.2
Cysts	2	1.7
Sialoadenits	1	0.9
Deep caries or periapical lesions	13	11.2
Myalgia	3	2.6
Pain in TMJ	6	5.2
Oral medicine problems	1	0.9
Dolor post	3	2.6
Benign tumor	2	1.7
Impacted teeth	2	1.7
Prosthodontic problem	6	5.2
Reffered for further testing	29	25.0
Not specified	28	24.1
Total	116	100.0

TABLE 3
SHOWING FURTHER TESTING AND CONSULTING, FOLLOWING THE FIRST EXAMINATION OF PATIENTS AT THE DEPARTMENT

Further testing and consulting	Number of patients (N=237)	%
Orthopantomogram	53	22.4
Neurosrugery	8	3.4
Neurology	31	13.1
Otorinolaringology	10	4.2
CT, MR, EEG	5	2.1
Ultrasound	2	0.8
RTG of sinus	11	4.6
Physical therapy	1	0.4
Oral medicine	2	0.8
Imunology	1	0.4
Orthopedics	1	0.4
Maxillofacial surgery	5	2.1
Acupuncture	1	0.4
RTG	2	0.8
Primary dentist	9	3.8
Prosthodontics	8	3.4
Not specified	87	36.7
Total	237	100.0

been prescribed as sole treatment or in combination with vitamins and carbamazepine, thus representing the most common form of treatment used at the Department.

TABLE 4
SHOWING THE PRESCRIBED THERAPIES AT THE DEPARTMENT

Therapy at the Department	Number of patients	%
Blockades	49	20.7
Blockades+carbamazepine	21	8.9
Other (metronidazol, diclofenac)	5	2.1
Blockades + vitamines	8	3.4
Blockades + carbamazepine + vitamines	4	1.7
Surgical procedures	3	1.3
Not specified	131	55.3
carbamazepine	12	5.1
Vitamines	4	1.7
Total	237	100.0

Discussion

According to the obtained results, neuralgia of the trigeminal nerve is a disease most frequently affecting elderly women. Koopman et al. showed in a study done on the Dutch population[4], as do Hall et al. in Great Britain, the distribution of neuralgia of the trigeminal nerve by age and sex comparable to our data[5].

Pain sensation caused by neuralgia of the trigeminal nerve is triggered by various stimulation pattern, and coldness or wind may also be triggering factors[6], so we wanted to determine whether trigeminal neuralgia appeared more frequently during winter months. The results have shown that there was no difference in the incidence of the disease regarding seasons and also the triggers mentioned by the patients have not been related to winter coldness. Koopman et al. claimed in their study that the incidence of trigeminal neuralgia increases linearly from spring until winter but do not find an explanation for this phenomenon, not described anywhere else in the literature[4].

Since the patients were referred to the Department by primary care dentists, we wanted to see how exact the diagnosing of trigeminal neuralgia was in the dental primary health care system. In analysis of the 116 patients referred by primary care dentists the result of 33.6% patients which were wrongly diagnosed implies that it is necessary to improve the training of primary care dentists in respective field of diagnosing trigeminal neuralgia cases, also stressed by Truelove[2]. Since this was a retrospective study, one of the big problems lays also in record-keeping errors or incompleteness. It was due to them that we had incomplete information about 28 patients, so it could only be assumed that the number of misdiagnosed patients would have been even greater.

The patients at the Department were treated by various methods, which most often involved blockades, carbamazepine or their combinations. However, the treatment also included diclofenac, metronidazole and vitamins. A

significant number of patients (55.3%) were treated with various medicines such as baclofen, lamotrigine, oxcarbazepine, phenytoin, gabapentin, pregabalin, and sodium valproate, gabapentin, or various combination of therapies which were hard to categorize. Comparing the treatment practice in the Department with the guidelines available in the literature we find that our treatment strategy was not harmonized completely with these guidelines. For example, Watson et al. offered guidelines for treating trigeminal neuralgia including carbamazepine as the first-line therapy; the next line is baclophene, in case that carbamazepine has no effect or its use has to be stopped, and phenytoin, as a possible supplement; the third line are anticonvulsives clonazepam, gabapentin and antispasmodics tizanidine and oxcarbazepine. In case the medications are not effective the patient is referred to a neurologist and a surgical treatment could be proposed[7].

The guidelines of the European Federation of Neurological Societies (EFNS) differ slightly from the above mentioned ones, but carbamazepine is again a drug of choice, along with it, the first-line therapy also includes oxcarbazepine. Although the medications such as tizanidine, baclophene, pimozide and lamotrigine have been reported for their favourable results, their clinical trials are insufficient for them to be proposed in treatment of the trigeminal neuralgia, and therefore surgical treatment is proposed as the second-line therapy[8].

The Croatian Society for Neurovascular Diseases has also issued guidelines for treating trigeminal neuralgia, and they correspond to those issued by EFNS[9].

We may conclude that the methods of treatment at the Department do not fully correspond with the guidelines being currently proposed, so certain corrections of the treatment routine are required. However, it is necessary to stress that the Department of Oral Surgery represents a certain link (inter-medium) between the primary dental care and neurologists.

Conclusions

1. Out of the number of patients referred to the Department by primary care dentists, 33.6% were clearly misdiagnosed, which in turn requires an improved training of general dental practitioners.

2. Treatment methods practised at the Department do not fully correspond to the ones proposed in the available literature (guidelines), so it is necessary to harmonize them.

3. Trigeminal neuralgia was more common in women, as well as elderly, while the season of the year had no effect on its incidence.

4. Out of the total number of patients, the disease recurred in 13.5%.

5. The study has shown the significance of additional tests and collaboration of various specialities due to the complexity of etiological factors. Furthermore, the symptom of pain sensation itself is not a sufficient as an indicator to diagnose neuralgia of the trigeminal nerve, so most patients have been referred to a neurologist for consultation.

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NEURALGIJA N. TRIGEMINUSA – ANALIZA SLUČAJEVA I POSTUPAKA LIJEČENJA NA ZAVODU ZA ORALNU KIRURGIJU KLINIČKE BOLNICE DUBRAVA

SAŽETAK

Cilj studije je bio utvrditi faktore rizika nastanka neuralgije n. trigeminusa, kao i učestalost pogrešne dijagnoze neuralgije n. trigeminusa postavljene od strane doktora dentalne medicine. Naš je cilj također bio usporediti protokol liječenja neuralgije n. trigeminusa na Zavodu za oralnu kirurgiju s kliničkim smjernicama, s naglaskom na važnost multidisciplinarnog pristupa liječenju neuralgije n. trigeminusa. U studiji je sudjelovalo 237 bolesnika (70 muškaraca i

167 žena u dobi od 5–91 god.) koji su upućeni na Zavod s dijagnozom neuralgije n. trigeminusa. Analiza je vršena na temelju medicinske dokumentacije bolesnika, demografskih podataka, uputne dijagnoze, kliničke dijagnoze i dodatnih dijagnostičkih postupaka i terapija. Neuralgija n. trigeminusa uglavnom zahvaća žene starije dobi, dok utjecaj godišnjeg doba na učestalost bolesti nije utvrđen. Najčešća terapija koja se primjenjivala na Zavodu su bile blokade, karbamazepin ili njihova kombinacija. Od svih pregledanih bolesnika njih 63,3% je upućeno na daljnje dijagnostičke testove. Podatak o 33,6% upućenih bolesnika od strane doktora dentalne medicine kojima je pogrešno dijagnosticirana neuralgija n. trigeminusa upućuje na potrebu bolje edukacije doktora dentalne medicine. Također je potrebno harmonizirati postupke liječenje koji se provode na Zavodu s kliničkim smjernicama za liječenje neuralgije n. trigeminusa. Zbog kompleksnosti etioloških faktora nužan je multidisciplinarni pristup.