Orofacial neuropathic pain

Algias neuropáticas orofaciais

Eduardo Grossmann[1], José Tadeu Tesserolli de Siqueira[2], Silvia Regina Dowgan Tesseroli de Siqueira[2]

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ABSTRACT

BACKGROUND AND OBJECTIVES: To carry out a literature review on major orofacial neuropathic pains, their differential diagnosis and therapies.
CONTENTS: Neuropathic pains may be classified as episodic or continuous. They may be unilateral and more infrequently bilateral. They may last for seconds, hours or days and may present as electrical shock or burning pain, favorably responding to pharmacological treatment. There are situations in which the first therapeutic choice is dental surgery and/or neurosurgery, especially in cases of malignancies. Without accurate diagnosis there is major possibility of poor results. Diagnosis is based on clinical history associated to pain quality, duration and clinical, surgical or combined therapeutic response. Additional exams may be needed in some cases, such as standard periapical radiography of the area to be investigated, panoramic X-rays, computerized tomography and magnetic resonance of the skull base for possible diagnostic confirmation. Treatment may be conservative using anticonvulsants associated or not to antidepressants, local anesthetic infiltration with or without steroid, and orofacial and neurosurgical procedures.
CONCLUSION: Health professionals acting in the area of orofacial pain have to be able to establish the differential diagnosis of different neuropathic orofacial pains, since they may have similar clinical presentations involving a same facial territory in a same temporal space, responding differently to the same therapies. Understanding all of this makes available basically two favorable outcomes: improved quality of life or cure of existing neuropathic pain.
Keywords: Clinical treatment, Neuropathic pain, Orofacial pain, Surgical treatment.

RESUMO

JUSTIFICATIVA E OBJETIVOS: Realizar uma revisão da literatura sobre as principais dores orofaciais neuropáticas seu diagnóstico diferencial e as suas terapias.
CONTEÚDO: As dores neuropáticas podem ser classificadas em episódicas ou continuas. Pode ter caráter unilateral e, mais raramente, de forma bilateral. Podem durar segundos, ou horas a dias. Ter uma natureza em choque elétrico, ou em queimação. Respondem, favoravelmente, ao emprego farmacológico. Há situações em que a primeira escolha terapêutica é a cirúrgica odontológica, e/ou neurocirúrgica principalmente nos casos de neoplasias. Sem o correto diagnóstico há grande possibilidade de um pobre resultado. Esse se baseia na história clínica associada à qualidade da dor, duração e a resposta terapêutica clínica, cirúrgica ou combinada. Pode ser necessário, em alguns casos, solicitar-se exames complementares, como radiografia periapical padrão da área a ser investigada, radiografia panorâmica, tomografia computadorizada e exame de ressonância magnética nuclear da base do crânio no intuito de uma possível confirmação diagnóstica. O tratamento pode ser clínico conservador utilizando anticonvulsivantes associados ou não a antidepressivos, infiltração anestésica local, com ou sem corticosteroide e procedimentos orofaciais e neurocirúrgicos.
CONCLUSÃO: Os profissionais da área da saúde, que medeiam na área da dor orofacial, têm de serem capazes de estabelecer o diagnóstico diferencial das diferentes algias orofaciais neuropáticas, uma vez que podem apresentar quadros clínicos similares envolvendo um mesmo território facial em um mesmo espaço temporal, respondendo diferentemente as mesmas terapêuticas. A compreensão de tudo isso, disponibiliza basicamente dois desfechos favoráveis: a melhoria da qualidade de vida do paciente ou a cura da dor neuropática presente.
Descritores: Dor neuropática, Dor orofacial, Tratamento cirúrgico, Tratamento clínico.

1. Universidade Federal do Rio Grande do Sul, Porto Alegre, RS, Brasil
2. Universidade de São Paulo, SP, Brasil.

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Correspondence to:
Eduardo Grossmann
Rua Coronel Corte Real, 513
90630-080 Porto Alegre, RS. Brasil.
E-mail: edugdor@gmail.com

INTRODUCTION

Neuropathic pain (NP) is defined as pain caused by somatosensory nervous system injury or disease[1]. It may be classified based on its temporal aspect as episodic or continuous. The former is characterized by a short-duration electric shock pain lasting seconds to minutes. In general there is a zone or trigger-point (TP) which may be intra or extraoral and when provoked by a mild non-traumatic stimulus is able to produce moderate to severe paroxysmal pain. In the latter, pain originates in neural structures, is constant, continuous and burning, with different and fluctuating levels of intensity, sometimes without total remission[2-6].
There are several chronic pain classifications which include neuropathic and orofacial topics. Best known is the definition proposed by the International Association for the Study of Pain (IASP) in 1994. This is a taxonomic classification and the cephalic segment is one of them[2]. Most widely used NP classification in the cephalic segment is that proposed by the International Headache Society (IHS) in its third edition[7]. It lists 21 possible diagnoses for NP and/or craniofacial neuropathies. On the other hand, the American Academy of Orofacial Pain (AAOP) generally follows these two classifications and orient for the need of differential diagnosis with other orofacial pains[8].
For this consensus, eight of them have been selected, taking into account prevalence, impact on patients and on the health system, and IASP guidance (2014) of the International Year Against Orofacial Pain.

TRIGEMINAL NEURALGIA

Trigeminal neuralgia (TN) is part of classic neuralgias group; it is the best know and feared facial neuralgia, presenting as shooting pain in electric shock, limited to fifth cranial nerve. In general it affects individuals between 50 and 70 years of age, with mean age of 50 years, most of them females. Pain attack is sudden, triggered by a tactile stimulus in points known as trigger-points[9]. Pain may last from seconds to 2 minutes and may occur several times a day, without motor changes in the affected area. Anticonvulsants significantly improve pain and there might be latency periods.
There are cases when pain returns without apparent reasons[10-17]. Pain episodes cause extreme jaw restriction, including daily functions such as swallowing, speaking and teeth-brushing; sensory abnormalities are also frequent in these patients[18]. The IHS[7] has included two other conditions with similar clinical expression: painful trigeminal neuralgia due to multiple sclerosis (differentiated by disease diagnosis and for not being mandatorily bilateral) and painful trigeminal neuropathy attributed to injury (caused by invasive process in the region of the trigeminal nerve).
These two conditions in general have associated sensory abnormalities. There is facial pain in 1 to 8% of multiple sclerosis cases. It is bilateral in 7.1 to 12.5% of patients. Mean age for multiple sclerosis (45.2 years) is lower than for idiopathic neuralgia patients. Facial pain is seldom the only manifestation of the disease. It usually follows multiple sclerosis onset during periods of up to 13 years. Treatment is similar to that of trigeminal neuralgias[19]. In 95% of patients with orofacial pain caused by multiple sclerosis, percutaneous ryzhotomy with trigeminal nerve radiofrequency relieves pain. Optic neuritis (retrobulbar) is more common among females and in the fourth decade of life. It results in visual deficit

and papilledema, almost always followed by retro-ocular pain. Multiple sclerosis, lupus erythematosus, other demyelinating diseases (diabetes), vitamin B12 deficiency, syphilis or vasculopathies are also its causes. Treatment consists of intravenous administration of methylprednisolone (1g/day). This measure decreases the affection state period, but does not influence the occurrence of sequelae. Oral steroids seem to be associated to high frequency of optic neuritis recurrence.

A study[20] has observed gustative complaints of trigeminal neuralgia patients submitted to percutaneous procedures for treatment. This, in turn, has triggered a new study to evaluate such quantitative sensory abnormalities[21]. This study has observed that complaints were transient and involved somatosensory, gustative and olfatory abnormalities[22]. In addition, subjective visual and auditory abnormalities were identified in patients with trigeminal neuralgia treated with trigeminal ganglion microcompression[22].

These studies were confirmed by further studies[23-25]. It is also important to stress the involvement of voltage-gated sodium channels in trigeminal neuralgia. Expression changes in Nav1.7 and Nav1.3 channels have been identified, showing that TN is a channelopathy[26]. In addition, chronic NP, including trigeminal neuralgia, often courses with secondary temporomandibular disorder, which should be considered in the differential diagnosis and thorough evaluation[27].

TN is characterized as excruciating pain and, during crises, patients may have symptoms of anxiety and depression. However, secondary diagnosis of anxiety or depression is seldom present, differently from other chronic facial pains[28]. The differential diagnosis with regard to dental diseases should also be judicious, since reports of iatrogenesis in these organs are frequent[29].

Initial TN treatment is pharmacological, being carbamazepine the first choice, followed by oxcarbamazepine and gabapentin. Tricyclic antidepressants may be used together with anticonvulsants. Neurological treatment may be necessary in refractory patients (75%) or those intolerant to the drug. Among them, microvascular decompression has excellent long term results, although with increased surgery-inherent risks.

There are less adverse effects on the masticatory system as compared to trigeminal ganglion balloon compression[18] which is a surgical percutaneous modality that can be used to treat TN[20]. Anesthetic block during balloon compression may decrease intraoperative complications[30]. There is recent literature evidence that acupuncture helps not only secondary pains but also decreases episodes and drug doses for TN[31]. However its effect lasts only during the treatment period. Other recognized percutaneous procedures for TN are radiofrequency rizhotomy, glycerol rizhotomy and radiosurgery[32].

SUNCT

This is a short-lasting unilateral neuralgiform headache attacks with conjunctival injection and tearing. It has to be distinguished from other classic neuralgias and orofacial pains[33]. It is characterized by short-lasting periocular painful paroxysms (15 to 120 seconds) followed by ocular and nasal congestion, tearing, rhinorrhea and ipsilateral frontal sweating. During crises, in general there is bradycardia, suggesting parasympathetic activation and increased systolic blood pressure. It is often rebel to treatment, which includes carbamazepine, indomethacin, lithium, amitriptyline, verapamil, sodium valproate and/or prednisone.

GLOSSOPHARYNGEAL NEURALGIA

It is similar to trigeminal neuralgia, differentiating by anatomic location. It occurs between 15 and 85 years of age, with mean age of 50 years, with equal distribution between genders[34]. It is an episodic unilateral pain in electric shock, shooting and severe. Attacks are short-lasting, from 30 to 60 seconds, and may be repeated for some hours. Pain may be triggered by swallowing, yawning, speaking, chewing or something touching tonsils. Glossopharyngeal neuralgia (GN) may be followed by cardiovascular changes such as bradycardia, asystole, hypotension or syncope[34].

In general, most severe pain referred by patients is below jaw angle, and TP may be located close to external acoustic meatus[35,36]. Treatment is similar to that for trigeminal neuralgia[3].

In spite of the improvement obtained with drugs for GN, its treatment often fails, differently from TN, and there is higher need for neurosurgical approach, especially percutaneous rizhotomy, trigeminal tractotomy and/or nucleotomy; being that the major clinical problem is still GN diagnosis, because it is uncommon and needs specialized evaluation by professionals with this type of experience[14].

SUPERIOR LARYNGEAL NERVE NEURALGIA

Severe, unilateral, short-lasting pain in electric shock lasting seconds to minutes, located in lateral pharynx, submandibular and infra-auricular regions, or auricular region itself. There is no predilection for gender and/or age. It may be triggered by swallowing, shouts, head rotation and blowing the nose. Trigger-zones of this disease are located in the hypothyroid region and lateral pharynx region. Laboratory and imaging exams do not show alterations, thus being of little help for the diagnosis. Clinical characteristics of pain, duration and nature, associated to anesthetic blocks and anticonvulsants help diagnosis and treatment[31,37-40]. In some cases when pharmacological treatment fails, it may be necessary to use bloody techniques, such as neurectomy of this nerve[3,14].

INTERMEDIATE NERVE NEURALGIA

Intermediate nerve neuralgia, also known as geniculate neuralgia, is characterized as unilateral deep pain in electric shock, deeply located in the ear, with the presence of triggering-areas close to the posterior portion of the external acoustic meatus, but seldom involving the two anterior thirds of the tongue and soft palate[3,34]. It may be triggered by stimulation of external acoustic meatus, by talking or swallowing. It may be associated to tearing, salivation, bitter taste, tinnitus, vertigo in the somatic side.

Treatment is similar to that of TN, that is, anticonvulsants are associated to antidepressants in low doses. If there is no satisfactory therapeutic response, open surgery might be needed for its decompression[3,14].

OCCIPITAL NERVE NEURALGIA

It is characterized by unilateral pain in shock or burning, located close to the occipital region, in general followed by dysesthesia and/or hypesthesia in the affected region and by pain at palpation of occipital nerve trunk. Cervical musculature palpation and pain reproduction after triggering-zones manipulation provide the diagnosis. It is momentarily relieved after nervous trunk infiltration with local anesthetics. Treatment consists of physical medicine, triggering-zones infiltration, anticonvulsants and psychotropic drugs. In cases when conservative or minimally invasive therapies fail, open radiofrequency occipital nerve neurectomy or second cervical root rizhotomy might be indicated[14,34].

PERSISTENT IDIOPATHIC FACIAL PAIN (PIFP)

This is the current name suggested by the IHS classification[7]. It is known as atypical facial pain or atypical odontalgia, depending on its location. It is characterized as pain lasting for more than three months daily recurring for more than two hours, without sensory deficit. It is poorly located, not following a peripheral nervous distribution. It is worsened by stress, being often associated to multiple dental procedures without satisfactory results, rather aggravating such painful presentation.

Therapy with tricyclic antidepressants, anticonvulsants, selective norepinephrine reuptake inhibitors, anesthetic pad or topic lidocaine is recommended. Surgical results, to date, are inconclusive[4].

Atypical odontalgia (AO) has been dissociated from PIFP and AFD when located in tooth or area where the tooth was located, in case of having been extracted. It tends to be called persistent dento-alveolar pain, however diagnostic criteria are virtually the same as for AFD. It is a persistent pain in maxillofacial region, not following diagnostic criteria of any other facial pain, not having an identifiable cause. It primarily affects females, mean age of 40 years, but may be present in adolescence. Pain may be located in a small area of the face or alveolar region, especially molars and premolars region, and may extend to associated areas, such as temporal and cervical regions[3,4,41,42]. Pain is described as deep, diffuse, continuous and persistent and may have burning or pressing sensation. Pain may be triggered by invasive dental

treatment or surgery[3,43,44].

There are still controversies in the literature about PIFP and atypical odontalgia pathophysiology. Some studies have shown sensory changes in these patients, which seems to indicate neuropathic mechanisms, at least in some cases[45,46]. Among etiologic factors involved with these conditions, one should stress dental implants, which have increased in frequency in general, and which may trigger PIFP or AO in predisposed patients[47,48].

Although maintaining this concept for AO, it is important to stress that different post-surgical conditions also fit, and seemingly with better criteria, such as peripheral post-traumatic painful neuropathy (PPTPN), which is part of IHS classification of 2013[7]. Examples are third molar and orthognathic surgeries and dental implants[3,47]. In general, patients have sensory facial or oral abnormalities associated to pain, but there might also be diagnostic delay and worsening of emotional factors, contributing to the chronicity of the disease and to increase patients' suffering.

Treatment follows the same orientations of those recommended for NP in general[47,48]. Recent studies have shown that samples of PIFP and PPTPN patients had no significant differences as compared to different sensitivity parameters[45] and also that patients with AO have descending inhibitory pain system impairment[49].

MOUTH-BURNING SYNDROME (MBS)

Such entity is also called stomatodynia, glossodynia, oral dysfunction anesthesia or stomatopirosis. It is a poorly understood painful condition, which primarily affects post-menopausal females. It may be classified as primary or secondary. In the former there is also neuropathology. In the latter there is local or systemic disease. This is characterized by burning sensation close to oral mucosa, symmetric and/or involving the two anterior thirds of the tongue, followed by dysgeusia and xerostomia[3,6], without identifiable cause[50].

Differential diagnosis should be done to rule out other systemic diseases such as diabetes *mellitus* (DM), anemia, fibromyalgia and malignancies[51,52]. There are evidences of several peripheral and central sensory changes[53-55]. It lasts from months to years. Its manifestation is minimal at emergence and is exacerbated along the day, worsening at night[4].

Sweet and salty gustative thresholds were found increased in these patients, however sour thresholds were decreased[56]. The reasons for such are not totally understood, but it is believed that hydrogen radicals mediation both in sour taste and in pain may be the potential cause. In case of MBS, other authors[54,57,58] had already observed gustative abnormalities, in addition to salivary quantitative and qualitative changes. Trigeminal sensory abnormalities may indicate changes such as increased glycemia in DM patients[59].

There is a possible association with anxiety, depression and personality disorders, however it is not clear whether psychological factors precede it or vice-versa. Treatment involve cognitive behavioral approaches and/or group therapy; topical drugs such as ansiolytic, capsaicin derivatives; antimicrobial drugs and laser therapy[3,4]. One may also use tricyclic antidepressants; ansiolytics, anticonvulsants, antioxidants such as alpha-lipoic acid, salivary stimulants and dopamine agonists[3,4].

CONCLUSION

Health professionals involved with orofacial pain have to be able to establish differential diagnosis of different orofacial neuropathic pains, since they may have similar clinical presentations involving a same face territory in a same temporal space, responding differently to the same therapies. Understanding all this allows for basically two favorable outcomes: improved patients' quality of life or NP healing.

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