Painful Posttraumatic Trigeminal Neuropathy: A Recently Recognized Entity

An unusual event recently occurred in the field of chronic orofacial pain. A new entity has been established through a few research papers and meetings of experts. Different specialists have known for some time that surgery and other traumatic events may injure the trigeminal nerve and provoke symptoms. Nerve damage may occur during Caldwell-Luc intervention, orthognathic mandibular advancement surgery, extrusion of root canal filling materials, implant surgery, and various traumatic events such as facial fractures and therapeutic radiation; third molar removal is the most frequent cause.[1] Several branches of the mandibular or maxillary division of the trigeminal nerve could be involved, such as the infraorbital nerve, the superior alveolar nerves, and most frequently the lingual and inferior alveolar nerves. The signs and symptoms are similar to those in neuropathic pain conditions elsewhere in the body, with either negative signs and symptoms such as anesthesia or hypoalgesia and/or signs and positive symptoms such as hyperalgesia, dysesthesia, allodynia, and continuous burning sensations. There is also a chronologic relation between the beginning of these signs and symptoms and the actual traumatic event (see reviews).[2,3] Because it has been poorly documented, both the incidence and the gravity of the patients' problems have often been underestimated. Not surprisingly, many different names have been used, including chronic injury–induced orofacial pain, anesthesia dolorosa, posttraumatic neuralgia or neuropathy, secondary trigeminal neuralgia from facial trauma, neuropathic orofacial pain, numb chin syndrome, and peripheral painful traumatic trigeminal neuropathy. Until recently, these clinical cases were not identified as belonging to a single entity, as can be inferred from the insufficient description[2] given by the two main classification systems.[4,5] Recently, the entity has gained recognition after the recent publication of some well-documented papers and the most recent proposal of the classification committee of the International Headache Society (IHS), which proposed the term "painful posttaumatic trigeminal neuropathy" (PPTTN).[6]

The recognition of this entity can be described as a three-phased approach, as outlined in the following:

1. *Identification of PPTTN as an independent entity:* This was suggested by a multicenter study which indicated that the 20 cases of PPTTN found among 245 cases of chronic orofacial pain tended to cluster.[7] This was in line with a recent study performed on 328 patients with chronic orofacial pain that indicated that over 12% of the cases were PPTTN.[8] These two studies pointed to a much larger prevalence than what was previously suspected, even if these samples were far from being representative of the general population since they came from tertiary care centers. The contribution of the different specialties to the incidence of PPTTN has been recently detailed.[2,9,10]
2. *Description of diagnostic criteria for PPTTN:* This has much improved due to recently performed studies. Quantitative sensory testing associated with electrophysiological exploration have better delineated the disease characteristics.[1,11,12] In a recent paper, diagnostic criteria, first proposed at the start of the work to select subjects with PPTTN, have been redefined at the end of the work and after having tested these criteria.[3]
3. *Inclusion of PPTTN in the IHS classification system:* This was done by a group of experts with either dental or medical backgrounds. Now, PPTTN is included under the main heading "chronic painful cranial neuropathies and other facial pains," in which one subheading is devoted to "painful trigeminal neuropathies." In this latter subheading, PPTTN is listed with painful trigeminal neuropathy attributed to acute herpes zoster, postherpetic trigeminal neuropathy, painful trigeminal neuropathy attributed to multiple sclerosis plaque, painful trigeminal neuropathy attributed to a space-occupying lesion, or to other diseases.

Finally, the IHS committee formulated the following diagnostic criteria for PPTTN[6]:

A. Facial or oral pain fulfilling items C and D below
B. History of traumatic event to the trigeminal nerve
C. Evidence of causation shown by the following:
   1. Pain develops within 3 to 6 months of an identifiable traumatic event to the trigeminal nerve
   2. Clinically evident positive (hyperalgesia, allodynia) and/or negative (hypoesthesia, hypoalgesia) signs of trigeminal nerve dysfunction
D. Not better accounted for by another ICHD-III diagnosis

Three points were added to complete this concise description:

- Pain duration ranges widely from paroxysmal to constant or mixed.
- Specifically following radiation-injury pain, neuropathy may appear later than 3 months.
- The term "painful" was included in PPTTN because most trigeminal nerve injuries do not result in pain.

Finally, it must be noted that PPTTN, as defined by the IHS, excludes the so-called "persistent idiopathic facial pain" and its dental form "atypical odontalgia," which probably pertain to the continuum of neuropathic mechanisms but frequently lack many features of PPTTN.[11] The fact that persistent idiopathic facial pain and some other dysfunctional conditions can be considered as possible or probable neuropathic entities[3] is suggested by the frequent occurrence of a small nerve injury at the beginning of the symptoms. A continuum of neuropathic mechanisms probably occurs across PPTTN and at least some of the dysfunctional orofacial pain conditions. In view of the clinical presentation, the neuropathic outcome may depend on the balance between the extent of the nerve injury and the influence of genetic and hormonal factors reflecting the psychosocial impact of chronic or/and intense acute stress.[13]

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