Diagnosis and management of orofacial pain

Pain is an unpleasant emotional feeling due to either physical or psychological trauma. It is usually initiated by a noxious stimulus (that injure or threaten to destroy the tissue) and transmitted through a specialized neural network to the central nervous system, where it is interpreted as pain. The pain may be classified according to the duration and severity into: Acute and Chronic pain.

*Acute pain: it is of short duration, moderate to severe and may be not relief by mild analgesics.

*Chronic pain: it is of long duration, mild to moderate in severity and is often associated with feelings of depression.

Classification of Orofacial Pain:-

I-Typical Orofacial Pain:
  a- Dental
  b- Periodontal
  c- Mucosal
  d- Bone
  e- Salivary gland 
  f- Temporo-Mandibular Joint (TMJ)
  g- Maxillary sinus

II- Psychogenic Orofacial Pain:
  a- Facial arthromyalgia
  b- Atypical facial pain
  c- Atypical odontalgia
  d- Oral dysthesia
  e- Factitious ulceration

III- Vascular Orofacial Pain:
  a- Migraine
  b- Cluster headache
  c- Giant cell arteritis

IV- Neuralgias:
  A- Primary neuralgia:
  I- Trigeminal neuralgia
  II- Glossopharyngeal neuralgia

  B- Secondary neuralgia:
  I- Extra cranial lesions:
  i- Two mental nerves neuralgia
  ii- Causalgia
  iii- Frey's auriculotemporal syndrome
  iv- Herpes zoster
  v- Post herpetic neuralgia
  vi- Nasopharyngeal carcinoma
  2- Cranial base lesions:
  i- PetrousTemporal osteitis
  ii- Cholesteatoma
  3- Intracranial lesions:
  i- Posterior cranial fossa
  ii- Middle cranial fossa
  iii- Multiple sclerosis

V- Other Orofacial Pain (Referred pain)
  a- Ocular
  b- Cardiac
  c- ENT
  d- Elongated styloid process

When there are no detectable signs of the disease, the patient's history is the only evidence which the clinician can make a diagnosis. So we must take the history carefully, but if there are associated signs we must send the patient for more investigations concerning the disease.

In order to diagnose any pain and to distinguish between organic and psychogenic pain it is essential to take the history which includes the following informations:

1- Character of the pain: sharp, dull, throbbing, burning or stabbing.

2- Severity of the pain: mild, moderate or severe.

3- Site at which it felt and any pain radiation.

4- Timing: frequency and duration of subsequent attacks.

5- Provoking factors: hot, cold, sweet, bruxism.

6- Relieving factors: analgesic, alcohol, narcotic, application of heat.

7- Associated clinical features: swelling, ulcer, trismus.

8- If the patient suffers from pain elsewhere in the body: abdominal pain or cervical pain.

9- General medical history.

10- Patient's emotional history: anxiety, depression, antidepressant drug.

11- Family history: ill health, death of parents, brothers, etc.
I-Typical Orofacial Pain
A-Dental pain (odontalgia):
Pulpitis is due to dental caries or fractured tooth. It is presented as transient dull or sharp pain provoked by thermal changes. The pain may be well localized on chewing but occasionally becomes diffuse or referred to the opposite jaw. Acute pulpitis and periapical abscess are tender to percussion. All teeth must be carefully examined, vitality test.
Treatment: Amalgam or Composite filling, RCT, Apicoectomy, or Extraction.

B-Periodontal pain:
Periodontitis presented as continuous dull pain initially relieved by clenching the teeth, but later on is aggravated by this action.
Treatment: Acute periodontal abscess treated by drainage of exudates and, and then do periodontal surgery when the acute phase has been subsided.

C-Mucosal pain
Traumatic ulceration, aphthous stomatitis, viral ulceration, erosive lichen planus, etc, which may involve the oral mucosa, causing burning pain which is provoked by spiced or hot food.
Investigation: biopsy if ulcer persists for more than two weeks. Treatment: Each condition requires specific therapy.

D-Bone pain:
Alveolar osteitis (dry socket), fracture, osteomyelitis and tumor causing bone pain which is vary from continuous dull ache to a severe throbbing.
Investigation: x-ray and biopsy. Treatment: Analgesic and antibiotic or surgery.

E-Salivary gland:
Diseases of the salivary glands such as sialadenitis, obstructed duct, mump and tumors presented as well localized intermittent dull pain and associated with a swollen gland and xerostomia.
Investigation: Plain radiography or sialography. Treatment: Each condition requires specific therapy.

F-Temporo-Mandibular Joint (TMJ):
*Traumatic arthritis of TMJ:
This occurs following damage to the capsule and meniscus due to direct trauma on the mandible. It is presented as moderate to severe pain, well localized and aggravated by mandibular movements and tender joint on palpation.
Investigation: X-ray (TMJ, PA, OPG views or MRI).
Treatment: Conservative therapy, resting the joint and analgesics.

*Osteoarthritis of the TMJ:
It is a degenerative condition, the pain is well localized to the affected joint, provoked by jaw movements and there is tenderness and audible crepitus in the joints.
Investigation: X-ray (TMJ, PA or OPG views) and Serum uric acid.
Treatment: Correction of the occlusion, Ibuprofen 400mg t.i.d., Intracapsular injection of 1ml Dexamethasone or smoothing of the condylar head by open surgery.

G-Maxillary sinus:
Sinusitis presents as dull or severe maxillary pain, either unilateral or bilateral which is become worse on head bending. The diagnosis may be obscured by sensitivity in the upper premolar and molar teeth which are tender to percussion giving the impression of pulpitis.
Investigation: X-ray; Occipitomental view reveals radiopaque sinus.
Treatment: Antibiotic, analgesic, nasal decongestant, or surgery.
II-Psychogenic Orofacial Pain:
Psychogenic pain occurs as a result of stressful life, anxiety, neurosis or depression. The clinical presentation of psychogenic orofacial pain includes:

A- Facial arthromyalgia (TMJ Myofascial Pain Dysfunction Syndrome):
The condition may vary from clicking of the joint on chewing or talking to a severe continuous ache in one or both joints, and the pain may radiate to the temporal, occipital regions, angle of the mandible, tenderness in the TMJ and muscles (temporalis, masster, medial & lateral pterygoid). The patient may also has accompanied pain in other body sites as cervical pain and irritable colon, etc.
The pain in TMJ may present at morning together with trismus and tend to improve during the day; in this case there is a history of nocturnal bruxism. Other patient tends to develop the TMJ pain during the course of the day which is due to stress. It is important to ask the patients whether they have suffer from anxiety, emotional disturbance or depression.
Treatment:
1. Adjustment of the occlusion and all dental diseases must be treated.
2. Reassuring that emotional tension expressed as bruxism which create muscle spasm.
3. Muscle relaxant medications as Norgesic or myogesic.
4. Tricyclic antidepressant (nortriptyline 10mg at night for 2-3 weeks). If there is no remission prescribe; Motival (flufenazine 0.5mg and nortriptyline 10 mg at night).
5. A bite-guard at night or during the day to discourage bruxism.
6. Psychiatric consultation for severely disturbed cases.
7. Surgery is controversial, and the need for condylotomy in some cases.

B- Atypical facial pain:
This is a common form of facial pain, described as intermittent or continuous dull pain of many years. It is localized to non-muscular, non-joint area but explained as ache in facial bones, alveolus and teeth. Like facial arthromyalgia it may associate with pains elsewhere in the body. A common feature is a sensation of nasal obstruction and a frequent swelling and redness of the face or minimal hyperemia of the oral mucosa, the patient take antibiotic but there is no regression of the swelling. The condition appears to be of vascular in origin.
Treatment: The same as facial arthromyalgia.

C- Atypical odontalgia:
Persistent or throbbing pain provoked by biting, chewing and thermal changes, arise without any detectable structural lesion. The condition becomes more recognized if the patient complains from painful teeth for more than one quadrant and even from healthy teeth, and when treat the affected teeth, the pain sill persist.
Treatment: The same as facial arthromyalgia.

D- Oral dysthesia:
This condition tends to be non-painful and more commonly occur in elderly with overt problem, menopause and loneliness. In some cases there may be evidence of an organic psychosis due to cerebral ischemic changes. The most common clinical presentations are: burning tongue, dry mouth in the presence of saliva, feelings of sand in the saliva, denture intolerance and abnormalities of taste.
Treatment: Reassurance, and Trifluperazine 2-4mg twice a day.

E- Factitious ulceration:
It is a self-inflicted ulceration which is difficult to recognize, particularly if the lesion resembles an aphthous ulcer, the mucosa may be abraded with rather finger nails or the application of erosive substance as Aspirin. The patient usually denies causing the lesion. The lesion is investigated by histopathological study and there is no evidence of any pathological lesion. Treatment: Trifluperazine 2-4mg a day.
III-Vascular Orofacial Pain:

A- Migraine:
This is a recurrent unilateral throbbing headache associated with visual disturbances and nausea. The pain is intensified by sneezing or movements of the head. It appears to be due to painful pulsatile extra cranial vasodilatation associated with intracranial vasoconstriction.
Treatment:
1. Analgesics.
2. Vasoactive Ergotamine Tartrate (2mg sublingually or 0.5mg inhaler).
3. Antidepressant; Motival (Flufenazine 0.5mg with Nortriptyline 10mg).

B- Cluster headache (Alarm clock headache):
It is a spastic dilatation of the maxillary branch of the external carotid artery, it mostly affect men and occurs at night, waking the patient in the early hours. It is an intense, throbbing pain usually lasting about half an hour.
Treatment: Ergotamine suppositories at night or Tricyclic antidepressant drugs.

C- Giant cell arteritis:
Arteritis of the superficial temporal artery present as a headache or local pain..
Arteritis of the maxillary artery present as pain in the masticatory muscles.
Arteritis of the lingual artery present as ulceration and necrosis of the tongue.
Investigation: Biopsy of the artery.
Treatment: Prednisone 60mg or Dexamethasone 10mg a day for 10 days and then reduced until the condition is under control.

IV- Neuralgias:
Types of neuralgia:

A-Primary neuralgia:
The etiology of neuralgia is unclear and has been attributed to viral infection of the nerve ganglion, demyelination of intracranial nerve roots due to nerve compression by small vascular loop, or by narrowing of the nerve foramina.

i- Paroxysmal Trigeminal Neuralgia (Tic Douloureux):
The pain is sharp, stabbing lasting within seconds and provoked by talking, swallowing or touching specific areas called the "trigger zone", usually affecting the middle aged and elderly and often women are more affected than men. The most common sites involved are the mandibular mental area and the maxillary canine area. The ophthalmic distribution of the trigeminal nerve is rarely affected. There is a periods of remission but the condition tends to recur or persist throughout the patient's life. The pain can be also an early manifestation of disseminated sclerosis. Treatment:
1. Anticonvulsant; Carbamazepine (Tegretol) 100-400mg, every 6 hours. The alternative drug is Phenytoin 200-400mg twice a day.
2. When drug therapy is inadequate or immediate relief is essential, injection of 1ml 60% or 90% Alcohol into the mental or infraorbital foramina, taking care to avoid entering a blood vessel by aspirating before the injection. In all cases 2ml of 2% lignocaine should be given before alcohol injection to avoid unnecessary pain.
3. Peripheral neurectomy
4. Cryotherapy
5. Intracranial preganglionic section of the mandibular and maxillary nerve trunk.

ii- Glossopharyngeal neuralgia:
This pain is brought on by swallowing and the pain radiate to the throat and ear.
Treatment: Tegretol 100-400 mg every 6 hours.
B- Secondary Neuralgias:
This may be due to irritation of the nerve ganglion or nerves by some identifiable lesion and may either mimic exactly the primary paroxysmal pain, or present as a less specific disturbance. The important differentiating features are the associated local sensory, reflex or motor impairment. The lesion causing nerve irritation can arise either extra cranial, within the cranial base or intracranial.

i- Extra cranial lesions:
   i- Two mental nerves neuralgia:
       The patient complain from pain in the lower mental areas due to pressure of lower denture flange on the mental nerve which has become superficial as a result of alveolar bone resorption. This condition treated by relieving the inner surface of the denture over the mental area. Other condition of mental neuralgia is due to entrapment of the mental nerve arising from narrowing of the mental foramen. This condition treated by decompression of the mental nerve by removal of a ring of bone around the margin of the foramen.
   
   ii- Causalgia:
       It is a well localized persistent burning pain at the site of nerve injury. It is typical of causalgia that exploration of the injured site and excision of scar tissue results in relief of pain, but the pain returns as healing is completed and new scar tissue forms.
       Treatment: Antidepressant, Cryotherapy, or Avulsion of the peripheral nerve.

iii- Frey's Auriculotemporal Syndrome:
       This condition arises following parotid gland or rarely TMJ surgery or trauma. The patient may complain of burning sensation in the temporal or facial region associated with flushing and profuse sweating on eating. The condition is attributed to parasympathetic secretomotor fiber reinnervation of the cut ends of the sympathetic fibers.
       Treatment: Conservative therapy with parasympathetic blockade using Poldine Methyl Sulphate 2-4mg 3 times a day. Or use topical application of Anticholinergic (hyoscine) cream may produce relief lasting up to 48 hours and repeat the application.

iv- Herpes zoster:
       Pain and burning sensation unilaterally precedes the vesicular eruption which may affect any peripheral nerve. This condition is due to activation of the Varicella virus resident in the nerve ganglion. If the virus involves the geniculate ganglion the patient will have a facial palsy, and the condition called Ramsay Hunt Syndrome.
       Treatment: Acyclovir, which can be given as tablets systemically as well as applied topically to the lesion.

v- Post herpetic neuralgia:
       This neuralgia may arise following untreated herpes zoster and presents as a persistent burning pain in an area of a diminished sensation. It is attributed to the destruction of the large myelinated sensory fibers by the Varicella virus.
       Treatment: Ibuprofen 400mg, 4-6 hourly and supplemented by Tricyclic antidepressant.

vi- Nasopharyngeal Carcinoma:
       It may be due to Epstein-Barr virus. The mandibular and maxillary nerves are involved giving rise to a combination of facial pain, hypoesthesia and wasting of the masseter muscle. Treatment: Radiotherapy and Cytotoxic drug.
2- Cranial base lesion:
i- Petrous-Temporal Osteitis:
   It is rarely occur, infection of the middle ear spread through the Petrous-temporal bone to
   the meninges and involves cranial nerves such as abducent nerve and trigeminal ganglion
   and producing a lateral rectus palsy and facial pain with hypoesthesia.
   Treatment: Careful debridement of the infected bone, a course of Metronidazole and
   vascularization of the dead space with a temporalis muscle flap.

ii- Cholesteatoma:
   This is a slow growing lesion within the Petrous-temporal bone, presented as chronic
   facial pain and hypoesthesia. The diagnosis made by CT scan and treated by surgical
   removal.

3- Intracranial lesions
i- Posterior cranial fossa lesions:
   Shwannoma of the trigeminal, facial and auditory cranial nerves leads to facial pain,
   sensory loss, deafness and ataxia. Diagnoses by CT scan and treated by surgical removal.

ii- Middle cranial fossa lesions:
   Include pituitary tumors and aneurysms of the internal carotid artery, and presented as
   facial pain, hypoesthesia with disturbance of the vision and ocular movements.
   The diagnosis by skull radiographs, angiography and CT scan and treated by surgery.

iii- Multiple sclerosis:
   The condition may present as a Tic Douloureux, but in most cases have accompanying
   neurological disturbances such as loss of taste, disturbance of facial sensation,
   neurological deficit of sensory, reflex or motor.

V- Other Orofacial Pain (Referred pain):
A- Ocular pain:
   Ophthalmic diseases such as acute glaucoma presents as ill-defined facial pain and treated by
   ophthalmologist.

B- Cardiac pain
   Severe pain of ischemic heart disease may refer to the left mandibular teeth via their common
   autonomic sensory innervations. The pain is provoked by effort, diagnosed by ECG and
   treated by cardiologist.

C- ENT:
   A painful otitis externa due to furuncle, impacted wax or a fungal infection, the pain is
   elicited by rotating the pinna, and may referred to the mandible.
   Peritonsillar abscess (quinsy) occasionally presents as pain in the maxilla and the patient
   misinterprets as toothache. Treatment: by ENT specialist.

D- Elongated styloid process (Eagle's syndrome):
   The pain arising from an elongated styloid process and there is a tenderness on palpation in
   the tonsillar fossa.

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