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Exam Preparatory Manual for Undergraduates

Oral Medicine and Radiology

K Anbarasi

Highlights

- Clear and straight to the point answers
- Logical and consistent layout
- Stress-free study guide
- Systematic reporting for periapical radiographs.

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CHAPTER 3

Orofacial Pain

HIGHLIGHTS

Pain is the most common symptom that makes the patients, seek dental treatment. Dental students should be confident in diagnosing the underlying pathophysiology based on patients' symptoms, direct them for appropriate investigations and provide treatment. This chapter summarizes the important aspects of pain originating from orofacial structures and helps the students to understand the course outline easily.

Students are expected to learn about:

- Classification of orofacial pain.
- Characteristics of different types of pain.
- Trigeminal neuralgia
- Atypical facial pain
- Atypical odontalgia
- Burning mouth syndrome.

ESSAY QUESTIONS

1. Enumerate the causes of orofacial pain.

Pain

Pain is a complex phenomenon, described as unpleasant sensory and an emotional experience caused by definite or potential tissue damage.

Classification Proposed by Academy of Orofacial Pain

- *Pain originating from intracranial lesions:*
  - Neoplasm
  - Hemorrhage
  - Hematoma
  - Edema
- *Pain arising from extracranial structures*
  - Teeth
  - Ears
  - Eyes
  - Nose
  - Throat
  - Tongue
  - Sinuses
  - Salivary glands
- *Musculoskeletal disorders*
  - Temporomandibular disorders
  - Masticatory muscle disorders
  - Fibromyalgia
  - Cervical disorders
  - Generalized polyarthritis
- *Neurovascular disorders*
  - Paroxysmal neuralgia
    - Trigeminal neuralgia
    - Glossopharyngeal neuralgia
  - Continuous neuralgia
    - Atypical odontalgia
    - Traumatic neuroma
    - Neuritis
    - Postherpetic neuralgia.

Classification Based on the Pathogenesis

- *Dental pain originating from tooth*
  - Pulpitis
  - Apical periodontitis
  - Pulp stone
  - Periapical abscess, dentoalveolar abscess
  - Faulty restorations
  - Cracked tooth syndrome

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- *Pain from supporting structures of teeth*
  - Pericoronitis
  - Periodontal abscess
  - Acute necrotizing ulcerative gingivitis
  - Acute necrotizing ulcerative periodontitis
- *Ulcers*
  - Aphthous ulcers
  - Traumatic ulcers
  - Pemphigus
  - Erythema multiforme
- *Physical, chemical, thermal and radiation injuries*
  - Aspirin burn
  - Thermal burn
  - Radiation stomatitis
- *Neurological pain*
  - Trigeminal neuralgia
  - Glossopharyngeal neuralgia
  - Sphenopalatine neuralgia
  - Postherpetic neuralgia
  - Atypical facial neuralgia
- *Sinusitis*
  - Maxillary sinusitis
  - Frontal sinusitis
  - Ethmoid sinusitis
- *Facial bone fracture*
  - Dentoalveolar fracture
  - Maxillary fracture
  - Mandibular fracture
  - Nasal complex fracture
  - Zygomatic arch fracture
- *Vascular disorders*
  - Migraine headache
  - Cluster headache
  - Tension headache
  - Temporal arteritis
- *Salivary gland origin*
  - Sialadenitis—bacterial parotitis, mumps
  - Sialolithiasis
- *Associated with syndrome*
  - Eagle syndrome
  - Trotter's syndrome
  - Frey's syndrome
- *Referred pain*
  - Angina pectoris
  - Otitis media
  - Coronary thrombosis.

A simple working classification proposed for orofacial pain (OFP) commonly encountered in dental practice, 2013

- *Neurologic*
  - Trigerminal neuralgia
  - Glossopharyngeal neuralgia
  - Sphenopalatine neuralgia
  - Postherpetic neuralgia
  - Lacrimal neuralgia
  - Multiple sclerosis
  - Auriculotemporal syndrome
  - Malignant neoplasm
  - Short-lasting, unilateral, neuralgiform headache attacks with conjunctival injection and tearing (SUNCT) syndrome
  - Anesthetic dolorosa (post-traumatic trigerminal neuropathy)
- *Vascular*
  - Temporal arteritis
  - Migraine headache
  - Cluster headache
  - Paroxysmal hemicranias
  - Neuralgia induced cavitational osteonecrosis
- *Musculoskeletal*

Muscle disorders
  - Myositis
  - Muscle neoplasms

Tempromandibular joint disorders (Congenital and developmental)
  - Disc derangement disorders
  - TMJ dislocation
  - Inflammatory disorders
  - Ankylosis and fractures
  - Eagle syndrome
- *Dental and oral diseases*
  - Pulpal disease
  - Periodontal disease
  - Salivary gland disorder
  - Oral ulcer
  - Lesion of jaws
- *Head and neck diseases*
  - Lesions of pharynx
  - Ocular lesions

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- Lesions of nose and sinus
- Lesion of ear

❖ *Psychosomatic*
- Myofascial pain dysfunction syndrome
- Phantom pain
- Atypical facial pain
- Atypical odontogenic pain
- Burning mouth syndrome
- Glossopyrosis imperial
- Glossodynia
- Idiopathic xerostomia
- Idiopathic dysgeusia

❖ *Connective tissue disorders*
- Rheumatoid arthritis
- Systemic lupus erythematosus
- Polyarthritis nodosa

❖ *Referred pain*
- Neck—cervical vertebral disease
- Heart—angina pectoris
- Lungs—lung cancer
- Esophagus—esophageal lesions
- Eyes—glaucoma
- Ears—middle ear disease.

2. What is neurogenic pain? Describe the etiology, clinical signs and symptoms, investigations, and medical management for trigeminal neuralgia.

Neurogenic Pain

❖ Pain originating from the nervous system that does not require nerve receptor or fiber stimulation.

❖ They are characterized by:
- Bright burning pain with stimulating quality.
- Good localization.
- Good correlation between site of pain and lesion.
- Associated with other sensory or motor symptoms.

Facial Neuralgia

Neuralgia is a unique group of pain involving any of the cranial nerves.

Trigeminal Neuralgia

❖ A unilateral pain characterized by brief electric shock-like symptoms, sudden in onset and cessation, restricted to the distribution of one or more branches of the trigeminal nerve. (Definition by International Headache society).

❖ Also known as *tic douloureux*, and *Fothergill's disease*.

Etiology and Pathogenesis

❖ The following causes are considered:
- In the majority of cases, etiology is idiopathic.
- Around 10% cases are associated with:
  - Tumor of cerebellopontine angle (or)
  - Multiple sclerosis.
  - Vascular malformation.
  - Vascular abnormalities pressing the nerve.
  - Meningioma of the posterior cranial fossa.

❖ The most *widely accepted theory* is:
- Atherosclerotic plaques developing in the superior cerebellar blood vessels, presses and grooves the trigeminal nerve (V cranial nerve). This causes demyelination of nerve fibers which in turn becomes hyperexcitable and react to mild pressure by pain sensation that persists for a short duration.
- This theory is supported by the MRI finding of close approximation between the blood vessel and VII nerve on the involved side.

Clinical Features

❖ Acute experience of severe shooting pain for few seconds.

❖ Pain characteristically has an *electric shock-like* quality and is unilateral. (In 3% of cases, bilateral occurrence is seen).

❖ Most commonly affected branch is maxillary, followed by mandibular and then ophthalmic. In some cases, more than one branch is affected.

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- Pain is precipitated by *trigger zones* present on skin or mucosa along the distribution of involved division. Common trigger point sites:
  - Nasolabial fold
  - Corner of mouth

  Activities like face shaving, chewing, talking and exposure to cold trigger the pain experience.
- *Intraoral trigger zones* may confuse the diagnosis by suggesting dental pain. The stabbing pain may mimic the pain of cracked tooth syndrome.
- The pain is characterized by episodes occurring for few weeks or months followed by periods of complete remission.
- The occurrence of pain varies between one or two incidents in a day to many incidents per minutes.

Diagnosis

- History of shooting pain along the branch of the fifth nerve, which is precipitated by touching the trigger zones.
- Routine cranial nerve examination will be normal in idiopathic trigeminal neuralgia, whereas sensory or motor changes may be evident in patients with a tumor, or other intracranial pathology.
- The local anesthetic block may temporarily eliminate the trigger zone pain.
- MRI—to rule out the presence of a tumor, multiple sclerosis, and vascular malformations.

Medical Management

- Anticonvulsant—carbamazepine.
  - It is the most effective *drug of choice* in 85% cases. It has both anticonvulsion and antineuralgic properties.
  - Carbamazepine is specific in relieving the trigeminal neuralgic pain and no other types of pain. Hence, it can be used for therapeutic diagnosis.

Dosage

Initially started as a small dose of 100 mg twice daily. In case of no side effects, the gradual increase of 100 mg every 48 hours up to maximum of 1,200 mg/day. The antineuralgic effect occurs at the serum concentration of 24–43 μmol/L.

Side Effects

Generalized erythema multiforme is the severe side effect. Others include bone marrow depression, nausea, vomiting, dizziness and double vision.

Baclofen

Skeletal muscle relaxant with CNS depressing property.

Dosage

- Initial dose—5 mg thrice daily for three days, followed by increasing 10–20 mg/day, up to a maximum dose of 80 mg/day.
- Baclofen is usually initiated after carbamazepine and is combined with carbamazepine for synergetic effect and thereby reducing the dose of carbamazepine and its adverse effects.

Others

Phenytoin—antiepileptic and is given 100 mg three times/day.
Gabapentin—300 mg/day as initial dose and increase 300 mg every day up to the maximum daily dose of 2,400 mg/day.

Prognosis

Since trigeminal neuralgia may have temporary recovery or permanent spontaneous remission, drug therapy should be gradually withdrawn if there is a pain free period of 3 months.

3. What is burning mouth syndrome? Describe the possible causative factors, clinical manifestations, and management of burning mouth syndrome.

- *Burning mouth syndrome* describes oral burning without any evidence of clinical abnormalities like mucosal lesions or neurologic disorders. It does not follow any anatomical course and does not show any radiographic or biochemical abnormalities.
- It is otherwise known as glossopyrosis.

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Etiology and Pathophysiology

- The exact cause is unknown.
- *Proposed factors include:*
  - Hormonal disturbances
  - Allergic disorders
  - Salivary gland hyposecretion
  - Chronic low-grade trauma
  - Psychiatric abnormalities
  - Parafunctional habits
- Hypersensitive response to certain food, dentifrices, mouth rinses, dental restorative materials are also suspected as a cause.
- A change in taste sensation is associated with burning mouth syndrome. Dysgeusia (abnormal taste) is more frequently reported in these patients mainly for bitter taste. This taste abnormality associated with burning mouth syndrome is due to a defect in the *sensory peripheral neural mechanism*.
- Psychological disorder: Patients with burning mouth syndrome often report with depression. The role of depression as a cause or result of this syndrome is uncertain.
- Chronic low-grade trauma due to parafunctional habits like rubbing the tongue across the teeth also considered as a possibility.
- Hormonal changes like menopause, diabetes, thyroid and parathyroid disorders are also proposed as causative factors.

Clinical Manifestations

- Women are affected more. (F:M is 7:1)
- Postmenopausal women are most frequently affected and occur between 3–12 years of postmenopause period.
- Any part of the oral cavity may be affected, but the tongue, lips, and palate are frequently involved.
- Burning sensation may be persistent but eating, swallowing, drinking and placing a candy, or chewing gum can relieve the symptom.
- Patients experience the *burning sensation typically upon awakening*, that increases in severity with the progression of a day but do not interfere with sleep.
- The patients may express the symptom as *fire on the mouth*.

Differential Diagnosis

- Conditions that cause burning symptoms like:
  - Oral lichen planus
  - Early stage of oral submucous fibrosis
  - Diabetic neuropathy
  - Anemic stomatitis.

Diagnosis

- There is no definitive diagnostic test for burning mouth syndrome. The following investigations are helpful to confirm the proposed contributing factors:
  - Exfoliative cytology for candidiasis.
  - Hormonal assay
  - Test for nutritional and vitamins deficiencies, anemia.
  - Diabetes (FBS, PPBS, HbA1C).

Management

- No single and promising treatment modalities are available. The condition can be managed but not cured.
  - Counseling and reassurance for individuals with mild burning sensation
  - Low doses of tricyclic antidepressants in moderate to severe symptomatic conditions.
    - Amitriptyline 25 mg twice daily for 15 days.
    - Clonazepam 2 mg once daily at bedtime for 15 days.
- These antidepressants can be given in combination with a sialagogue like buffered citrate or nortriptyline (25 mg at night) which is highly beneficial.
  - Topical anesthetics like lignocaine and benzydamine hydrochloride may also be used.
  - Multivitamins can also be instituted as a placebo, supportive measure.

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SHORT NOTES

1. Atypical odontalgia (or) phantom tooth pain.

Definition

- Atypical odontalgia is a severe throbbing type of dental pain with no clinical or radiographic evidence for any pathology.
- The term *phantom pain* is used to denote specifically for persistent pain in endodontically treated tooth or edentulous areas where no radiographic or clinical evidence for pathology is present.
- The etiology and pathophysiology are not specified and is considered as a component of the psychosomatic disorder.

Clinical Features

- Patients present with a complaint of toothache.
- More common in middle and older age women.
- The patient will point out specific single tooth or rarely a group of adjacent teeth in the same quadrant.
- More frequent in maxillary premolar, and molar region.
- Involvement of mandibular teeth are infrequent.
- Pain cannot be provoked by probing or palpation and is not altered by posture.

Diagnostic Criteria

- Pain in an edentulous arch.
- Continuous pain persisting for more than 4 months.
- No evidence for referred pain.
- Absence of radiographic and laboratory findings to support the pain.

Treatment

- Tricyclic antidepressants—amitriptyline 25–75 mg/day. In case of no immediate remedy, medication should be continued for 3 months.
- Phenothiazines can be used as a supplement to tricyclic antidepressants.

2. Describe the referred pain in orofacial region (or) describe the systemic diseases that may cause pain in orofacial region.

- Pain or other unpleasant symptoms in the orofacial region sometimes denote underlying severe condition. Systemic conditions can be diagnosed based on their characteristic pain on specific orofacial site.
- Pain originating from distinct organ and experienced in a different region is called as referred pain.
- Various systemic conditions may produce a pain symptom in the orofacial region (Table 1).

Table 1: Referred pain in orofacial region.

Pain or symptoms in orofacial region (referred pain)	Disease
Pain experienced at the *angle of mandible* that worsens with exertion and relieves at rest	*Cardiac ischemia*
Trismus, distinct sensation experienced in the region supplied by mandibular nerve, and earache	*Carcinoma of infratemporal fossa*
Trigeminal neuralgia in individuals above 50 years	*Multiple sclerosis*
Severe throbbing, temporal pain, *tenderness, and swelling in temporal artery region*, transient visual abnormalities	*Temporal arteritis*
Sudden onset of a headache associated with nausea and vomiting, precipitated by changes in posture	*Intracranial tumor*
Pain in facial region associated with *altered sensation*	*Tumor invading the nerve*

3. Glossopharyngeal neuralgia.

Glossopharyngeal Neuralgia

- It is a sudden onset pain like trigeminal neuralgia but less intense. Common *causes for this neuralgia* are intracranial and

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extracranial tumors, and vascular abnormalities that can compress IX cranial nerve.

- The pain occurs along the course of glossopharyngeal nerve (IX) and involves *pharynx, posterior tongue, ear, infra-auricular region, retromandibular part.*

Trigger Zones

- These are located along the course and pain is *triggered by* stimulating pharyngeal mucosa during *chewing, swallowing and talking*.
- This neuralgia also associated with *vagal symptoms* like syncope and arrhythmia due to the close proximity of glossopharyngeal and vagus nerve.

Differential Diagnosis

Geniculate neuralgia and temporomandibular disorders (due to pain associated with mandibular movements in glossopharyngeal neuralgia).

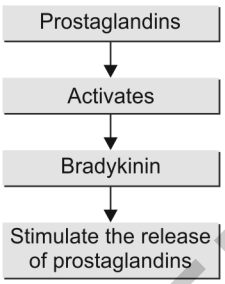
Treatment

Carbamazepine 100 mg twice daily and baclofen 5 mg thrice daily.

4. Describe the chemical mediators of pain.

Chemical mediators are biochemical factors associated with pain.

- Bradykinin: Endogenous polypeptides released from inflammatory cells and ischemic tissues. It serves as powerful vasodilator and acts by increasing vascular permeability. It excites all types of receptors and sensitizes some high threshold receptors to respond to otherwise innocuous stimuli.
- Histamine: It is a vasoactive amine which acts as a vasodilator and increases small vessels permeability.
- Prostaglandin: It sensitizes nociceptors to all types of stimuli and thus lowering their pain threshold for all kinds of stimulation.



- Serotonin: It is a monoamine algogenic agent and is associated with peripheral vascular pain.
- Substance P
  - It is a polypeptide, acts centrally as an excitatory neurotransmitter for nociceptive impulses.
  - It is released from spinal cord cells by A-delta and C fibers and excites dorsal horn neurons when stimuli trigger them.
  - Substance P modulated pain is non-rapid and of short duration.

5. Describe the clinical findings, diagnosis, and treatment of atypical facial pain.

- Atypical facial pain denotes no muscle or joint pain and has no detectable neurological cause. It produces continuous and variable intensity pain migrating, nagging, deep and diffuse pain which cannot be diagnosed with any other condition.
- So, the terminology atypical facial pain is reserved for painful condition that does not fulfill the criteria for other orofacial pain conditions.

Clinical Features

- Facial pain typically manifests in the middle-aged women.
- The pain is described as kind of vague, burning, aching or cramping, occurring on one side of the face, preferably in the areas supplied by the trigeminal nerve that may spread to the upper neck or backside of the scalp.

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- The duration of pain is continuous, and remission is rare.
- The pain will not respond to any medications.
- There will not be any detectable pathology clinically as well as in any investigatory methods.

Diagnosis

- When all the possible causes of facial pain like dental causes, paranasal sinuses related, myofascial and temporomandibular joint related origin, traumatic and inflammatory aspects are ruled out, atypical facial pain should be considered.
- Conventional and advanced imaging modalities should be performed to rule out any possible pathology in the orofacial region.
- Through neurological examination should be carried out to eliminate neurological disorders.

Management

- Medical management includes gabapentin and amitriptyline.
- Alternative therapies like acupressure and acupuncture.
- Transcutaneous electric nerve stimulation (TENS).

6. Nervus intermedius neuralgia (or) Geniculate neuralgia.

- Nervus intermedius neuralgia is a rare type of paroxysmal neuralgia.
- Pain will be experienced along the sensory distribution of nervous intermedius like ear, anterior tongue and soft palate.
- The patient complaints pain in the anterior region of tongue, soft palate, and ear.
- Trigger zones are present within the ipsilateral distribution of the nerve which on provocation causes pain.
- Pain is not sharp as similar to trigeminal neuralgia.
- There may be facial paralysis associated with this neuralgia indicating the simultaneous involvement of motor root of the facial nerve.
- Herpes zoster infection of geniculate ganglion and the nervous intermedius branch of facial nerve (VII N) results in geniculate neuralgia and is known as Ramsay Hunt syndrome. High potent steroid therapy for 2–3 weeks duration is effective. Acyclovir, carbamazepine, and antidepressants are also used for management of this condition.

7. Describe visual analog scale.

- The visual analog scale is used to determine the intensity pain. It is a 10 cm line on which:
  - 0 cm denotes no pain.
  - 10 cm denotes severe pain. (extremely severe pain).
- The patients need to mark a point on the scale that best quantify their pain. The interpretation is made from the score on the numerical scale (1–10) or on descriptive scale (e.g. no pain, mild pain, moderate pain and severe pain) (Fig. 1).
- Visual analog scales are helpful to understand the patient's pain threshold potential and *assess the treatment effects*.

8. Eagle's syndrome (or) elongated styloid process (or) stylohyoid syndrome.

- The stylohyoid ligament connects the styloid process of the temporal bone to hyoid bone. Elongation of the styloid process impinges or compresses the adjacent structures and cause *Eagle's syndrome*.
- It is also called as *diffuse intraosseous skeletal hypertrophy syndrome* (*DISH* syndrome).

Types

- *Classic type*—occurs after tonsillectomy, where surgical exposure of the styloid process heals by *scar formation*. This scar tissue exerts pressure on the adjacent nerve and causes *pain on swallowing*.
- *Carotid artery syndrome—elongated styloid process or calcified stylohyoid ligament* compresses the external or internal carotid artery and cause pain.

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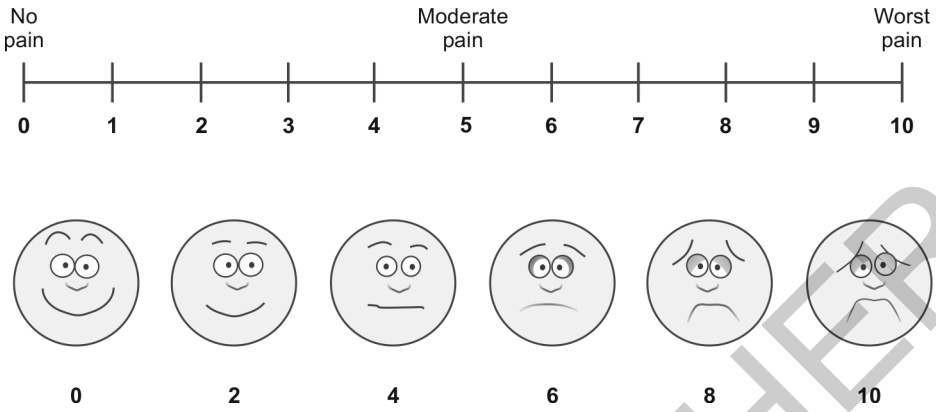


Fig. 1: Visual analog scale.

- *Traumatic Eagle's syndrome*—fracture of calcified stylohyoid ligament causes this type of pain.

Clinical Features

Commonly occurs in middle-age group. Pain is experienced along the lateral pharyngeal wall, side of lower face and neck. There will be difficulty in swallowing, sore throat, painful tongue, and headache. Blurred vision and vertigo also be associated.

Investigation

Orthopantomograph reveals elongated styloid process.

Treatment

- Injection of corticosteroid at the styloid process.
- Surgical segmentation of elongated process.

9. Cracked tooth syndrome (or) greenstick fracture of crown.

Cracked tooth syndrome is a condition associated with the partial fracture of a vital posterior tooth that extends up to the dentine or into the pulp.

Pathogenesis

- Masticatory pressure applied to the cracked crown will separate the tooth components along the line of the crack. If the separation occurs in dentine, movement of dentinal fluid will stimulate odontoblasts in the pulp and subsequently stimulate pulpal nociceptors.
- Movement of saliva through the crack line also increases the sensitivity of dentine.

If the crack extends to the pulp, then direct stimulation of pulp tissues occurs.

Clinical Features

- Age group involved—between 30 years and 50 years of age.
- Gender—men and women are equally affected.
- Commonly affected teeth—mandibular second molar, mandibular first molar, maxillary premolars.
- The centrally located crack may extend to pulp whereas peripherally situated crack cause cuspal fracture alone.
- Pain provoked on biting and disappears after the pressure relief is a typical sign.

Diagnosis

- *Bite tests:* Instruct the patient to bite on various objects like a toothpick, cotton roll, or wooden stick by placing them between the teeth will elicit pain. Pain increases when the occlusal force increases, and relieved once the pressure is withdrawn.

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This test is the confirmatory test for cracked tooth diagnosis.

- ❖ Vitality testing usually gives a positive response.

Differential Diagnosis

Galvanic pain associated with amalgam restorations—galvanic pain occurs on bringing the teeth together (resting position) but decreases when full contact is made.

Treatment

- ❖ Peripherally located crack which is relatively small, can usually be restored.
- ❖ Tooth with centrally located crack should be stabilized with an orthodontic stainless steel band with occlusal adjustment will provide immediate pain relief. Provisional, full acrylic crown may also be used for stabilization. The tooth should be examined 2–4 weeks later, and if symptoms of irreversible pulpitis present, endodontic treatment should be performed.
- ❖ When vertical cracks occur, the tooth should be extracted.

MULTIPLE CHOICE QUESTIONS

1. *Spontaneous pain* is one that occurs ***without any stimuli***.
   a. In response to stimuli
   b. Without any stimuli
   c. Following provocation
   d. With no organic damage
2. *Induced pain* is one that arises ***in response to stimuli***.
   a. Without provocation
   b. In response to tissue damage
   c. In response to stimuli
   d. Without organic damage
3. *Intractable pain* is one that ***does not respond to treatment***.
   a. Does not respond to treatment
   b. Cannot be diagnosed
   c. Radiate to different sites
   d. Does not require treatment.
4. *Dull pain* is characterized by ***depressing quality***.
   a. Exciting quality
   b. Exhilarating quality
   c. Stimulating quality
   d. Depressing quality
5. *Sharp pain* is characterized by ***stimulating quality***.
   a. Exciting quality
   b. Exhilarating quality
   c. Stimulating quality
   d. Depressing quality
6. Sharp intermittent pain of short duration is known as ***pricking pain***.
   a. Pricking pain
   b. Stimulating pain
   c. Stinging pain
   d. Intractable pain
7. Continuous, high intensity pain characterizes ***stinging pain***.
   a. Pricking pain
   b. Stimulating pain
   c. Stinging pain
   d. Intractable pain
8. Free nerve ending receptors are for ***tactile sensation***.
   a. Cold sensation
   b. Tingling sensation
   c. Tactile sensation
   d. Creeping sensation
   (**Note:** Free nerve ending receptors are for tactile sensation and superficial pain).
9. Krause's corpuscles are ***cold receptors***.
   a. Cold receptors
   b. Pressure receptors
   c. Pain receptors
   d. Touch receptors
10. Ruffini corpuscles are ***warmth receptors***.
    a. Cold receptors
    b. Warmth receptors
    c. Pain receptors
    d. Mechanoreceptor
    (**Note:** Ruffini corpuscles are pressure and warmth receptors).
11. Merkel's corpuscles are ***tactile receptors***.
    a. Cold receptors
    b. Tactile receptors

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c. Pain receptors
d. Warmth receptors
(**Note:** Merkel's corpuscles are tactile receptors in oral mucosa and submucosa of the tongue).

12. Golgi tendon organs are ***mechanoreceptors***.
    a. Cold receptors
    b. Warmth receptors
    c. Pain receptors
    d. Mechanoreceptors
    (**Note:** Golgi tendon organs are mechanoreceptors in muscles and tendons).
13. Pain sensation is predominantly carried through ***small fibers***.
    a. Small fibers b. Large fibers
    c. Thick fibers d. Thin fibers
14. Nociceptors are ***pain receptors***.
    a. Cold receptors
    b. Tactile receptors
    c. Pain receptors
    d. Warmth receptors
15. Pain produced by stimuli that are not painful is known as ***allodynia***.
    a. Hyperalgesia
    b. Allodynia
    c. Costalgia
    d. Algedonic
16. Orofacial pain revealing elevated erythrocyte sedimentation rate is ***temporal arteritis***.
    a. Temporal arteritis
    b. Lupus vasculitis
    c. Polyarteritis nodosa
    d. Giant cell arteritis
17. Orofacial pain that is associated with abnormal laboratory finding is ***temporal arteritis***.
    a. Temporal arteritis
    b. Lupus vasculitis
    c. Polyarteritis nodosa
    d. Giant cell arteritis
18. The significant risk associated with the prolonged use of nonsteroidal anti-inflammatory drugs (NSAIDs) is ***gastrointestinal bleeding***.
    a. Hepatic damage
    b. Bronchospasm
    c. Gastrointestinal bleeding
    d. Nephritic syndrome
19. Visual analog scale measures the ***pain intensity***.
    a. Depression state
    b. Pain intensity
    c. Blanching property
    d. Patch test result
20. The sensory experience of pain is measured by ***McGill pain questionnaire***.
    a. McGill pain questionnaire
    b. Numerical rating scale
    c. Verbal descriptor scale
    d. McMonnies screening questionnaire
    (**Note:** McGill pain questionnaire measures the sensory experience of pain with affective and cognitive qualities).
21. *Glossodynia* refers to ***burning pain in the tongue***.
    a. Burning pain in the tongue
    b. Referred pain in the tongue
    c. Swollen and painful tongue
    d. Painful bleeding tongue.
22. Glossopyrosis refers to ***burning pain in the oral mucosa***.
    a. Burning pain in the tongue
    b. Burning pain in the oral mucosa
    c. Atrophic and painful tongue
    d. Atrophic and painful oral mucosa
23. Sudden attack or outburst of pain is known as ***paroxysmal pain***.
    a. Nocturnal pain b. Diurnal pain
    c. Paroxysmal pain d. Excruciating pain

VIVA VOCE

1. What is an intermittent pain?

Intermittent pain is characterized by the pain of a short duration that is separated by entirely pain-free periods.

2. What is a continuous pain?

Intermittent pain is characterized as the pain of longer duration even though variable in intensity.

3. What is a recurrent pain?

Two or more painful episodes per day with periodic pain-free intervals.

4. What is a periodic pain?

Pain at regularly recurring episodes.

5. What is throbbing or pulsatile pain?

An intermittent quality of pain coincident with cardiac systoles.

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6. What is superficial pain?

The patients accurately describe the pain that is precisely localizable to a superficial lesion or structure with timing and intensity of symptoms.

7. What is a deep pain?

Pain originating from visceral organs with symptoms being diffuse often referred to other regions or as muscle spasm.

8. Pain in orofacial region that mimic dental pain.

Trigeminal neuralgia, maxillary sinusitis, masticatory muscle spasm, atypical odontalgia, atypical facial pain.

9. Systemic conditions that cause headache and orofacial pain.

Paget's disease, hyperthyroidism, hyperparathyroidism, multiple myeloma, metastatic lesions, vincristine therapy for cancer, vitamin B, folic acid and iron deficiencies.

10. Why nonsteroidal anti-inflammatory drugs cause intestinal bleeding (or) why NSAID's should be avoided in patients with gastric ulcer.

- Nonsteroidal anti-inflammatory drugs work by inhibiting the enzyme cyclooxygenase (COX) which is essential for the synthesis of prostaglandins (PG's). PG sensitizes the peripheral sensory nerves to experience pain.
- Prostaglandins maintain the protective layer of gastric mucosa also. In the deficiency or absence of prostaglandins, gastric mucosa becomes more vulnerable to erosion and bleeds.

11. What is the mode of action of capsaicin?

- At the site of application, capsaicin causes neurogenic inflammation and burning sensation followed by hyperalgesia (increased sensitivity to painful stimuli).
- After multiple applications, capsaicin blocks C-fiber conduction and depletes the stores of substance P in C-fibers and decreases their input into the central nervous system.

12. What is barodontalgia (aerodontalgia)?

Pain experienced in the teeth because of alteration in the atmospheric pressure gradient. Individuals may experience a sharp or squeezing pain at an altitude of approximately 3,000 m with 0.75 standard atmosphere pressure and a water depth of 10 m with 1 atm.

13. What is acute pain?

Acute pain is one that subsides within the period required for the process of normal healing. It persists only as long as the stimuli persist.

BIBLIOGRAPHY

1. Chen J, Sindou M. Vago-glossopharyngeal neuralgia: a literature review of neurosurgical experience. Acta neurochir (Wien). 2015;157(2):311-21.
2. Coculescu EC, Radu A, Coculescu BI. Burning mouth syndrome: a review on diagnosis and treatment. Journal of medicine and life. 2014;7(4):512-6.
3. Lynch CD, McConnell RJ. The cracked tooth syndrome. J Can Dent Assoc. 2002; 68(8):470-5.
4. Okeson JP. Bell's orofacial pains: the clinical management of orofacial pain. Chicago, Ill, USA: Quintessence Publishing Company; 2005.
5. Piagkou M, Anagnostopoulou S, Kouladouros K, et al. Eagle's syndrome: a review of the literature. Clin Anat. 2009;22(5):545-58.
6. Toda K. Trigeminal neuralgia—symptoms, diagnosis, classification, and related disorders. Oral Science International. 2007;4(1):1-9.
7. Woda A, Pionchon P. A unified concept of idiopathic orofacial pain: pathophysiologic features. J Orofac Pain. 2000;1;14(3):196-212.

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