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TOOTHACHE

Introduction: Toothache is the most common cause of oral pain. This can impact routine daily activities such as eating, studying and concentrating on delicate tasks. It is a public health problem which directly influences the quality of life in a community.

Investigating the prevalence of toothache can give policymakers and health authorities the required data about a community and its health care needs.

Definition: Toothache is said to be a pain in or around a tooth. While pain is an unpleasant sensation ranging from mild discomfort to agonized distress associated with real or potential tissue damage.

Causes of Toothache: Could be classified into:

- a) Dental causes
- b) Non – dental causes
- c) Atypical facial pain (atypical odontalgia)

Dental causes: (odontogenic Condition)

These are the major cause of toothache.

1. Pulpitis caused by tooth decay, dental trauma (crack or fracture) or filling with imperfect seal
 - a) Reversible pulpitis – if the inflamed pulp is capable of returning to a state of health. Characterized by short lasting pain triggered by cold and sometimes heat.
 - b) Irreversible pulpitis – if pulp dies (necrosed pulp)

2. Dentine hypersensitivity; presents as short lasting dental pain occurring in about 15% of population triggered by cold (liquids or air), sweet or spicy foods & beverages. Localized to areas with no insulation due to gingival recession, exposing roots of teeth. Can occur following scaling and polishing or dental bleaching or due to erosion. Pulp is healthy in this condition.
3. **Apical periodontitis** – could be acute or chronic inflammation around the apex of a tooth, caused by immune response to bacteria within an infected pulp. Condition is characterized by a well localized, spontaneous persistent moderate or severe pain. Alveolar process over the roots may be tender to palpation.
Tooth raised in socket or more prominent than adjacent teeth.
4. **Food impaction** – occurs when fibrous food such as meat becomes trapped between two teeth where there is an open contact and pushed into the gums during chewing. This presents as a localized discomfort or mild pain and a feeling of pressure from between the teeth. Gingiva papilla is swollen, tender & bleeds when touched. Pain occurs during and after eating Pain may slowly disappear or relieved immediately by using toothpick or dental floss in the affected area.
5. **Gingival or periodontal abscess:-** This may follow food impaction. Lateral periodontal/periodontal abscess is a collection of pus that forms in the gingival crevices usually as a result of chronic periodontitis where periodontal pockets are deeper than 3mm. Immune system is breached and inflammatory response results forming pus. If untreated periodontal abscess leads to pulp death. Other causes of periodontal abscess are: Following scaling & polishing, tooth fracture and food packing. This periodontal abscess presents with toothache that is generally deep & throbbing. Oral mucosa over an early periodontal abscess is erythematous (red), swollen, shiny & painful to touch
 - A variant of periodontal abscess is gingival abscess which is limited to gingival margin. Has a faster onset, usually caused by trauma from items such as fish bone toothpick, or toothbrush
6. **Acute Necrotizing Ulcerative gingivitis (ANUG)** – A common marginal gingivitis in response to a painless condition. Develops suddenly. Associated with severe periodontal

pain bleeding gum, "punched out" ulceration, loss of interdental papillae & possibly also halitosis (bad breath) and a bad taste. Predisposing factors includes poor oral hygiene, smoking malnutrition, psychological stresses & immunosuppression. Not contagious but occurs in cases who share same risk factors (e.g students in dormitories, prisoners).

ANUG is treated by debridement of necrotic gingiva, home care with hydrogen peroxide mouthwash and analgesics when in pain.

Antibiotics not indicated in ANUG management except there is an underlying systemic disease.

7. **Pericoronitis**:- inflammation of soft tissue surrounding a crown of a partially erupted tooth.

Characterized by severe throbbing pain which may radiate to adjacent areas of head & neck, redness swelling & tenderness of gum over the tooth. There may be trismus, facial swelling & rubor (flushing) of the cheek that overlies the angle of the jaws.

Treatment includes cleaning area under operculum with antiseptic solution, swallowing painkillers and antibiotics if indicated. Definitive treatment is extraction or less commonly operculectomy (removal of soft tissue).

8. **Occlusal trauma**: This results from excessive biting forces exerted on teeth which overloads the periodontal ligament causing periodontal pain & a reversible increase in tooth mobility.

Occlusal trauma occurs with bruxism and parafunctional clenching of teeth & grinding during sleep or while awake. Over time there maybe attrition (tooth wear) resulting in dentine hypersensitivity & possibly formation of periodontal abscess. Occlusal trauma occurs when a newly placed dental restoration is built too high, concentrating biting forces on one tooth. An increase in height of restoration measuring less than a millimeter can cause pain. Therefore dentist should routinely check that new restoration is in harmony with the bite and forces are distributed correctly over many teeth using articulating paper.

Treatment :- Quickly eliminate high spot.

9. **Alveolar Osteitis:** A complication of tooth extraction (especially lower wisdom teeth) in which blood clot is not formed or is lost leaving socket where the tooth used to be empty & bare bone is exposed to the mouth. Pain is moderate to severe, dull aching or throbbing in character. Pain localized to socket, may radiate. Starts 2 or 4 days after extraction and may last 10 – 40 days. Healing is delayed. Treated with local anesthetic dressing, for 5 days to 7 days. Chlorhexidine mouthwash prior to extraction prevents alveolar osteitis.
10. **Dental trauma & cracked tooth syndrome.** Crack tooth syndrome – highly variable degrees of pain sensitivity usually accompany a fractured tooth. Usually sporadic, sharp pain which occurs during biting or with release of biting pressure or relieved by releasing pressure on the tooth. Fracture of a tooth involves enamel, dentine and / or pulp. Could be orientated horizontally or vertically. Vertical fractures are difficult to identify by probing or seen on radiographs because the fracture runs in the plane of conventional films
 - Toothache from trauma (either pulpal or periodontal in diagnosis), the treatment & prognosis depend on extent of damage to the tooth, stage of tooth development, degree of displacement, avulsed tooth time out of socket & the state of health of the tooth & bone. Trauma guides assist in determining the prognosis & direct treatment decision.
11. **Periodontic – endodontic lesion:** Teeth with apical abscesses could spread to involve the periodontal pockets around a tooth. Periodontal pockets eventual result to pulp necrosis via accessory canals or apical foramen at the bottom of the tooth. Characterized by acute pain similar to symptoms of periodontal abscess or they may cause mild pain or no pain at all if it is chronic & free – draining. Successful root canal therapy is advocated. Generally, long term prognosis is poor.

Non dental Causes:

These are much less common as compared to dental causes.

These are;

- a) Myofascial pain (muscle pain)
- b) Angina pectoris (classical, refer to pains in lower jaw)
- c) Psychogenic toothache.
- d) Acute and chronic sinusitis
- e) Trigeminal zoster
- f) Trigeminal neuralgia
- g) Temporomandibular disorder (TMJ pain dysfunction syndrome)
- h) Atypical odontalgia (toothache with no identifiable dental or medical cause) – Present with unusual symptoms such as pain which migrates from one tooth to another and which crosses anatomical boundaries such as from the left teeth to right teeth.

Note: No specific treatment for non-dental pain (each treatment is directed at the cause of pain rather than toothache itself)

Diagnosis of toothache

- This is challenging due to several potential causes of dental pain which is extremely variable & could be referred.
- Majority of toothache is caused by dental sources.
- All orofacial pains should be considered as having dental origin until proven otherwise. Diagnosis of any lesion should be carried out in the following sequence of, history taking followed by clinical examination & finally investigation
- All information gathered should be collated to build a clinical picture and a differential diagnosis of the cause of pain.

Symptoms: Most relevant in diagnosis of toothache are chief complaint & onset of the complaint

- Difference between reversible and irreversible pulpitis is given in the history taking, for example a pain following a stimulus is found in reversible pulpitis while a lingering pain which is spontaneous in nature is found in irreversible pulpitis.
- From history taking, indicators of pulpal, periodontal, a combination of both or non – dental cases can be observed.

- A periodontal pain is frequently localized to a particular tooth, made worse on biting on the tooth, has a sudden onset, associated with bleeding when brushing. More than one factor maybe involved in the toothache.
- Non – dental sources of pain often cause multiple teeth to hurt and have an epicenter that is either above or below the jaws. Often the character of the pain is the differentiator between dental and non – dental pain

Clinical Examination:

- Clinical examination narrows source of pain down to a specific tooth, teeth or a non – dental cause. Clinical examination moves from the outside to the inside and from general to specific causes.
- Outside of mouth – Consider sinuses, muscles of face & neck, the TMJs and clinical lymphnodes are palpated for pain or swelling.
- In the mouth - Consider soft tissues of gingiva, mucosa, tongue & pharynx. These are examined for redness, swelling or deformity
- The teeth are examined – painful teeth are percussed (tapped), palpated at the base of the root & probed with a dental explorer for dental caries and a periodontal probe for periodontitis then wiggled for mobility.
- Factors indicating infection include movement of fluid in the tissues during palpation (fluctuance), swollen lymphnodes in the neck & fever with an oral temperature of more than 37⁰C

Investigation:-

Any tooth identified as having pain during history taking or during clinical examination will undergo further testing for vitality of the dental pulp, infection, fracture or periodontitis.

These tests may include,

- 1) Pulp sensitivity tests

- Heat 71% (Gutta Percha)
 - Cold 86% (ethyl chloride)
 - Electric pulp testing 81%
- 2) Radiography – for dental caries, bone loss laterally & at apex
- 3) Assessment of biting on individual tooth (might help to localized the problem) or the separate cusps (may help detect cracked cusp syndrome). Other less commonly used tests are
- Transillumination to highlight crack or detect congestion of maxillary sinus
 - Dyes to visualized cracks
 - Test cavity, selective anesthesia, laser Doppler flowmetry

Prevention of toothache

- Most toothache result from plaque related diseases which can be prevented by low sugar diet and maintenance of good oral hygiene
- Reduction in number of times of consumption of refined sugar. Brush the teeth twice daily with fluoride tooth paste and daily interdental flossing.
- Regular visits to dentist at least every 6months for checkup and professional scaling and polishing to detect early and avert problem of toothache
- Routine use of mouth guards in contact sports to reduce rate of occurrence of dental trauma

Management:-

1. Emergency:

Most cases of toothache are brought about by inflammatory process thus non-steroidal anti – inflammatory process, (NSAIDS) are recommended. Simple analgesics may have little effect on some severe toothache and this might lead to individuals using more than the maximum dose.

Due to several causes of toothache it is therefore very important for the patient to see a dentist for accurate diagnosis.

- The goal of treatment by the dentist is to relieve pain and possibly preserve and restore the tooth to function.
- Treatment depends on (a) the cause of toothache, (b) the current state and long-term prognosis of the affected tooth, (c) Individual wishes, (d) ability to cope with the dental treatment. Usually there is the administration of intra oral local anesthesia using lidocaine and epinephrine in order to ensure a pain free treatment.
- Treatment range from simple advice, removal of dental decay, with dental drill followed by filling, to root canal treatment, tooth extraction and debridement.

Contraindications: Patients should avoid the topical application of aspirin tablets and toothache remedies containing; eugenol e.g. clove oil on the gum; this will cause mucosal ulceration. Also not advisable to use local remedies such as alligator pepper, Alcood, Touch and Go, local gin (ogogoro), battery water and schnapps gin.

2. **Pulpitis & sequelae** –

- a) Reversible pulpitis – remove decay & correct the causative factor. Dental caries is usually the cause of reversible pulpitis.
 - This is removed followed by a sedative dressing to encourage pulp to return to state of health.
 - Either a base underneath a permanent filling or a temporary filling to last for about 6 weeks for pulpitis to resolve.
- b) Irreversible pulpitis, & its sequelae pulp necrosis and apical periodontitis require root canal treatment or tooth extraction.
 - Field of regenerative endodontics is developing ways to clean the pulp chamber and regenerate the soft & hard tissues to regrow & simulate pulp structure. This will benefit children where tooth root is still developing

3. **Dental abscess:** - General principle is, where there is pus “drain it”. This applies to periodontal abscess, pericoronal abscess and apical pus where there is usually a collection of pus in the tissues. This is referred to as open drainage. This drainage can be achieved via the tooth socket through extraction of the offending tooth or incision and

drainage carried out in which a small incision is made in soft-tissues over the abscess at the most dependent point.

4. **Antibiotics:** - Broad spectrum antibiotics such as amoxicillin are typically used for a short course of about 5 – 7 days. This is because most microbiologic culture and sensitivity test are rarely done in general dental practice.
- Antibiotics typically, only temporarily suppress an infection and need for definitive treatment is postponed for an unpredictable length of time.
However, the truth is that antibiotics are rarely needed but should be used restrictively in dentistry. Local measures such as incision & drainage and removal of the cause of infection such as necrotic tooth pulp have greater therapeutic benefit and is more important.
 - If abscess drainage has been established, antibiotics are not usually necessary.
 - Antibiotics are used to suppress the infection until local measures are carried out.
 - Antibiotics may be administered to immunosuppressed individuals who are less able to fight off infection.
 - Antibiotics are required when there is evidence of systemic involvement such as high fever 38.5°C , cervical lymphadenopathy or malaise as in cases of rapidly spreading infections, cellulitis, severe pericoronitis, Ludwigs angina.
 - Ludwig's angina (associated with drooling, difficulty in swallowing which are signs of threatened airway) and cavernous sinus thromboses are rare but serious complications of odontogenic infection. These are severe infections and should be managed in the hospital

Prognosis: Most dental pain can be treated routinely if case is presented early enough.