“Taking the pain out of diagnosis: a look at causes of non-odontogenic pain”

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Odontogenic Pain
1. Pulpal pain
2. Periodontal pain

Pulpal pain
Types
- Reversible Pulpitis
- Irreversible Pulpitis
- Pulpal Necrosis

Causes
- Caries, Dentinal hypersensitivity, CTS, Trauma, Traumatic occlusion

Periodontal pain
Causes
- Infection – periapical abscess, periodontal abscess, pericoronitis, etc
- Trauma – occlusal overloading, food packing

Diagnosis of odontogenic pain
1. History
2. Visual inspection
3. Vitality tests
4. Percussion tests
5. Radiographs – PA’s, BW’s, OPG
6. Special tests to identify cracks
7. Special tests to recreate symptoms (thermal stimuli under rubber dam to recreate pain)

Management of odontogenic pain
Non odontogenic pain

Consider a non odontogenic toothache:
- Pain history is not typical of pulpal or periodontal pain
- No clinically obvious dental cause
- Pain cannot be reproduced
- Special test results are normal or ambiguous

Non odontogenic pain

1. Maxillary Sinusitis
2. TMD
3. Atypical Odontalgia/Atypical Facial Pain
4. Pre trigeminal Neuralgia
5. Trigeminal Neuralgia
6. Herpes Zoster
7. Headaches – Migraine, Cluster, CPH
8. Intracranial pathology and tumours
9. Extracranial pathology and tumours

Diagnosis of non odontogenic pain

1. History
2. History
3. History
4. Extra-oral examination
5. Intra-oral examination
6. Diagnostic tests
   a) Recreation of pain
   b) Diagnostic LA
   c) Imaging

2 (or 3) possible diagnoses
Diagnosis of non-odontogenic pain

4. Extra-oral examination
   - Visual inspection for swelling, asymmetry, cutaneous changes
   - Palpation of muscles of mastication, neck muscles and TMJ’s
   - Palpation of bone overlying Mx sinuses
   - Inspection of jaw opening and movement of TMJ’s (limited opening, locking, clicking?)
   - Palpation of cervical lymph nodes

Diagnosis of non-odontogenic pain

5. Intra-oral examination
   - Dentition - attrition
   - Periodontium
   - Oral mucosa
     a) linea alba
     b) ridging
     c) scalloping

Diagnosis of non-odontogenic pain

6. Special tests to aid in diagnosis
   a) Recreation of pain
   b) Diagnostic LA
   c) Diagnostic Imaging

Recreation of pain

Diagnosis of non-odontogenic TA
Diagnosis of non-odontogenic pain

Diagnostic LA – to exclude pain of odontogenic origin

Diagnostic Imaging

1. OPG
2. TMJ tomograms
3. CT
4. MRI

Diagnosis of non-odontogenic pain

Diagnostic Imaging:

- Sinusitis
- Neoplasm

Maxillary Sinusitis

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Non odontogenic pain

- Pressure or pain in the region of one or both maxillary sinuses and/or in posterior maxillary teeth
- Pain is increased by lowering the head
- Teeth may be sore to chew on
- History of recent sinusitis or URTI
- Other common sinusitis symptoms - congestion/fullness of sinuses, nasal discharge, post nasal drip, blocked nose, loss of smell
- Loss of olfaction
Maxillary Sinusitis
2. Special Tests
a) Dental
   - Teeth may be TTP
   - Teeth may be hypersensitive to cold
   - No reliable cause for odontogenic pain either clinically and/or radiographically

Maxillary Sinusitis
2. Special Tests
b) Imaging

Maxillary Sinusitis
Aetiology - Multifactorial
1. Host factors
   - Genetic/congenital conditions – immotile cilia syndrome
   - Sinonasal anatomic abnormalities
2. Environmental
   - Infectious agents – bacteria, viruses
   - Allergens

Maxillary Sinusitis
Management
- Nasal corticosteroids
- Decongestants
  (adrenergic activity $\rightarrow$ vasoconstriction $\rightarrow$)
- Antibiotics (where cause is bacterial) - Amoxyl
- Saline rinses
- Analgesics

Temporomandibular Disorder
A collective term embracing a number of clinical problems that involve the masticatory musculature, the TMJ and associated structures, or both (Jeffrey Okeson, 1996).

Temporomandibular Disorder
1. History
   - Symptoms of TMD – joint noises, mandibular dysfunction, facial pain, bruxism
   - Pain quality – intermittent ache (non-pulsatile)
   - Pain exacerbated by mandibular function or stress
   - Site – face, head and/or teeth
   - Associated dental pain does not demonstrate sensitivity to thermal or mechanical stimuli
Temporomandibular Disorder

2. Examination – Masticatory apparatus
   - Joint noises
   - Mandibular dysfunction
   - Tenderness to palpation – muscles of mastication, TMJ’s, neck muscles

3. Special tests to help differentiate between TA
   a) Recreation of pain - Travell et al. (1983)
   b) Diagnostic LA

Temporomandibular Disorder

Causes
- Bruxism
- Trauma (physical)
- Direct
- Indirect

Risk factors
- Genetics
- Age
- Gender
- Stress
- Anxiety/depression
- Inadequate occlusion

Management
1. Home rest of masticatory system
   - Particularly methods to reduce/cease day bruxism
2. Home treatment modalities - self massage, heat packs
3. Dental splints
4. Restoration of bite and reducing the load on the TMJ’s
5. Physiotherapy

Management cont.
6. Medications/Analgesics
   - Acute pain - analgaesics, muscle relaxants
   - Chronic pain - low dose TCA’s, anticonvulsants
7. TMJ surgery
8. Other – acupuncture, other forms of physical therapy, TENS,

Atypical Odontalgia

- A condition whereby pain is experienced in a tooth, or in an area previously occupied by a tooth, in the absence of any abnormal pathology
Atypical Odontalgia

1. History
- Location – Tooth or tooth site
- Onset – Post-treatment (restorative, RCT, extraction)
- Quality – Aching, burning, throbbing
- Duration – Constant (but does not prevent sleep or awaken patient from sleep)
- Intensity – Fluctuates, moderate to severe
- Has been present for more than 4 months
- Depression/Anxiety

Atypical Odontalgia

2. Special Tests
a) Diagnostic LA – unhelpful/equivocal
b) Recreation of pain – unable to
c) Imaging – unhelpful

Therefore, diagnosis must come from the history

Atypical Odontalgia

Aetiology – Unknown

Risk factors
- Operative trauma, psychological illness, female gender

Neuropathic in nature

Neuropathic Pain

Tissue injury
- Anatomical and neurochemical changes of peripheral nerve and 2nd order neurons
- Tissue healing
- Anatomical and neurochemical changes of peripheral nerve and 2nd order neurons PERSIST
- Persistence of pain

Atypical Odontalgia

Management
1. Low dose TCA’s (eg Endep)
2. Anticonvulsants (eg Lyrica, Tegretol, Neurontin)

Atypical Facial Pain

- A chronic pain condition of unknown actiology that is felt continuously throughout all or part of the day within the bone or deep tissues of the orofacial region
- Co morbid psychological distress
Atypical Facial Pain

1. History
   - Location - bone/deep tissues +/- teeth/alveolar bone
     - unilateral or bilateral
   - Onset – Post trauma (injury to jaw) or Post-treatment (restorative, RCT, extraction)
   - Quality – Aching, burning, throbbing
   - Duration – Constant (but does not prevent sleep or awaken patient from sleep)
   - Intensity – Fluctuates, moderate to severe
   - Has been present for more than 4 months
   - Depression/Anxiety

Aetiology – Unknown
Neuropathic in nature
Risk factors
- Operative trauma, psychological illness, female gender

Management
1. Low dose TCA’s (eg Endep)
2. Anticonvulsants
   (eg Lyrica, Tegretol, Neurontin)

Trigeminal Neuralgia

1. History
   - Type – lancinating, electric shock-like
   - Duration – episodes of pain which last a few seconds
   - Between paroxysms patient is entirely asymptomatic
   - Site – facial pain and/or tooth
   - Intensity - severe
   - Onset – spontaneous or stimulation of a trigger zone

Sudden bursts or volleys of pain, usually of an electric shock or lancinating quality, in the distribution of one or more branches of the trigeminal nerve

1. History cont.
   - Trigger zone – intra oral or extra oral
   - Tooth itself may be a trigger zone
Trigeminal Neuralgia

2. Special Tests
   a) Diagnostic LA of trigger zone prevents pain episodes
   b) Recreation of pain by stimulating the trigger zone

IHS Diagnostic Criteria

A. Paroxysmal attacks of pain lasting from a fraction of a second to 2 minutes, affecting one or more divisions of the trigeminal nerve and fulfilling criteria B-C

B. Pain has at least 1 of the following characteristics:
   1. intense, sharp, superficial or stabbing
   2. precipitated from trigger areas or by trigger factors

C. Attacks are stereotyped in the individual patient

D. There is no clinically evident neurological deficit

E. Not attributed to another disorder

Trigeminal Neuralgia

Aetiology

1. Primary
   - Neurovascular conflict (majority)

2. Secondary
   - Clear pathology – tumours, cysts, infection, trauma, MS

Management

1. Medications
   - Anticonvulsants (e.g., Tegretol)

2. Surgery
   - Neurovascular decompression
   - Removal of mass

Intracranial and Extracranial Tumours

1. Intracranial

2. Extracranial
   - Infratemporal space, maxillary sinuses, nasal cavity, masticator space, parapharyngeal spaces, mandible, etc

Intracranial and Extracranial Tumours

1. History
   - Very rare
   - Facial pain and/or ‘toothache’
   - ‘Red flags’:
     1. Swelling/mass
     2. Progressively worsening symptoms (incl. pain)
     3. No relief from treatment normally expected to help
     4. Neurological symptoms – sensory changes, motor
     5. Systemic features – fever, weight loss, fatigue
Intracranial and Extrakranial Tumours

2. Special Tests
   Imaging – MRI of head, CT of head