New Frontiers of Orofacial Pain

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Pain - ความปวด

Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage

The International Association for the Study of Pain

Pain – Chronic or acute?

Chronic non-malignant pain in the orofacial region

• Neuropathic pain
  Post-traumatic trigeminal neuropathy
  Trigeminal neuralgia
  Burning Mouth Syndrome

• Non-neuropathic pain
  Temporomandibular Disorders (TMDs)
  Inflammatory TMJ pain
  Persistent Idiopathic Facial Pain?

Trigeminal nerve

Introduction to Neuropathic Trigeminal Pain and its Mechanism
Neuropathic pain: Definitions

Pain initiated or caused by a primary lesion or dysfunction in the nervous system

Mersky and Bogduk, the International Association for the Study of Pain, 1994

Pain arising as a direct consequence of diseases or lesions affecting the somatosensory system

Neuropathic pain working group, 2006, Treede et al., 2007

Neuropathic vs Non-neuropathic

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<thead>
<tr>
<th></th>
<th>NP</th>
<th>Non-NP</th>
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<tbody>
<tr>
<td>Electric shocks</td>
<td>65%</td>
<td>17%</td>
</tr>
<tr>
<td>Tingling, pins-needles</td>
<td>63%</td>
<td>17%</td>
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<tr>
<td>Tactile alldynia</td>
<td>42%</td>
<td>4%</td>
</tr>
<tr>
<td>Burning</td>
<td>68%</td>
<td>30%</td>
</tr>
<tr>
<td>Itching</td>
<td>29%</td>
<td>6%</td>
</tr>
<tr>
<td>Heat/cold sensitivity</td>
<td>24%</td>
<td>4%</td>
</tr>
<tr>
<td>Numbness</td>
<td>66%</td>
<td>30%</td>
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Bouhassira et al 2005

The paradox of neuropathic pain

Nerve injury or disease should dull sensation, NOT enhance it!!
Hyperexcitability
key in chronic pain

Trigeminal neuralgia (tic douloureux)
- Paroxysmal electric shock-like pains with intervening pain-free intervals
- Refractory period (similar to postictal refractory period) and no build up pain
- Referred paroxysmal pain (triggered point)
- Remission period
- Respond extremely well to carbamazepine and neuro-surgical treatment

Burning Mouth Syndrome
Patients with burning sensation/discomfort of the mouth with clinically normal oral mucosa in whom a medical and dental cause has been excluded.

Pathogenesis of TN

Is Burning Mouth a Neuropathic or a Psychogenic Pain?

Clinical study
Burning mouth syndrome as a trigeminal small fibre neuropathy: Increased heat and capsaicin receptor TRPV1 in nerve fibres correlates with pain score
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Evidence for BMS as a neuropathic pain

- Cekic-Arambasin et al (1990) temperature changes on the tongue
- Grushka and Bartoshuk (2000) supertasters and damage to chorda tympani + V
- Jääskeläinen (2004) have shown that neural mechanism play a significant role abnormal blink reflexes and QST
- Lauria et al (2005) lower density epithelial nerve fibres art part tongue, correlated duration

New concept of investigation and assessment

Investigations of neuropathic pain

- None
  - no definitive test for the condition
- MRI
  - Shows other lesions - MS; lesions along the nerve
  - Shows vessel
  - 8% controls positive so not diagnostic
- Neurophysiology
  - QST shows sensory deficit
Two studies have now shown that MRI can identify a reduced diameter and volume of affected nerves in trigeminal neuralgia.


Characer of pain

- Sharp, shooting, stabbing, unbearable, like lightning or an electric shock, cattle prod
- McGill Pain Questionnaires (MPQ), 78 adjective words describing pain (Melzack, 1975)

Mri for diagnosis

MRI for diagnosis?

Psychosocial and Quality of life

- McGill Pain Questionnaire (MPQ)
- Brief Pain Inventory (BPI)
- Hospital and Anxiety Scale (HAD)
Quantitative Sensory Testing (QST) as a Diagnostic Tool in Neuropathic Pain

QST

• A mechanism based therapy = A specific symptom predicts a specific underlying mechanism

• A single symptom may be generated by several different mechanisms, so a specific symptom profile might be required to predict the underlying mechanism

New concept of classification

Standardized QST protocol

Classification of Neuropathic Pain

• Anatomically based (Polyneuropathy, mononeuropathy etc)

• Etiology or disease based (Diabetes mellitus, Postherpetic neuralgia, amputation, HIV, etc.)

• Symptom based, presumed mechanisms (Ongoing stimulus-independent pain, Stimulus-evoked pain)
Towards a new taxonomy of idiopathic orofacial pain

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Keywords: Orofacial pain, Trigeminal neuralgia, Post traumatic neuralgia, Migraine, Cluster headache.

New concept of chronic pain management

The era of Evidence based Dentistry

How are you going to determine the best way to manage patients with facial pain of non dental origin?

Finding the answer

- Ask evidence-based questions (hypothesis formulation)
- Search for the current best evidence
- Critically appraise the information (is the information valid and important?)
- Apply this information to your patient’s problems or questions

Levels of evidence for treatment

- Level 1a: SR with a meta analysis
- Level 1b: Randomised Controlled Trial (RCT)
- Level 2: poorer RCT, cohort studies
- Level 3: case controls
- Level 4: case series, poor cohort
- Level 5: experts opinion
**Strength of recommendations**

A - good evidence to support - level 1  
B - fair evidence to support – level 2, 3  
C - poor evidence to support – level 4  
D - fair evidence to reject treatment –level 5  
E - good evidence to reject the treatment

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**Looking for evidence?**

Looking for evidence?

What evidence for TMDs?  
Cochrane reviews

- **EMG biofeedback** – available data support efficacy  
- **Acupuncture** – confirmation of efficacy requires more rigorous investigation  
- **Occlusal adjustment** – no evidence from RCTs that occlusal adjustment treats or prevents TMD (review 2004)  
- **Stabilisation splint therapy** – insufficient evidence for or against use (review 2004)  
  - Weak evidence of benefit in reducing symptoms

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**Surgical Management of orofacial pain (trigeminal neuralgia)**

- **Peripheral surgery (by Dentist)**  
  - Ablative surgery  
  - Cryosurgery

- **Peripheral surgery (by Neurosurgeon)**  
  - Gasserian ganglion surgery  
  - Posterior fossae surgery  
  - Gamma knife surgery

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**Gasserian Ganglion surgery**

- Radiofrequency thermorhizotomy (RFT)  
- Percutaneous glycerol rhizotomy (PGR)  
- Balloon microcompression
Gasserian Ganglion procedures
- Radiofrequency rhizotomy
- Glycerol rhizotomy
- Balloon compression

Psychosocial impact

Posterior fossa surgery
- Microvascular decompression
- Partial sensory rhizotomy

To treat chronic pain, one must understand pain
- Most pain serve a purpose
- Pain does not always equal harm
- Pain is a lonely subjective experience
- Stress is a natural enemy to pain passion
- Chronic pain erodes all aspects of a patients’ life
- Psychological disturbances are common consequence of chronic pain
- Treat the whole patient, not just the patients’ pain
- Provide understanding and hope

Gate control theory of pain – what happens when my face hurts
- Cultural factors
- Past experience
- Personality
- Others
- Pain emotion
- Pain response

Counselling, cognitive behavioural changes

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Cognitive behaviour treatment

Based on learning theory

- Behaviour is largely learnt – conscious or subconscious
- Can be changed by directed learning
- Ways of thinking and beliefs can be learnt and so can be changed

CBT and Pain


Comparison of antidepressant medication alone and in conjunction with cognitive behavioural therapy for chronic idiopathic facial pain. Harrison et al Proceedings of the 8th World Congress on Pain IASP Press.1997 :8, 663-672

Aims of cognitive change

- Reduce distress caused by pain
- Reduce depression
- Lessen fear
- Reduce frustration
- Increase control
- Decrease healthcare

Future Directions for Orofacial Pain Study

Method for behavioural change

- Goal setting and pacing
- Relaxation
- Decrease of fear
- Fitness regimen
- Reduce drug dependence

How is CBT delivered is it effective?

- Clinical psychologist
- 6-20 sessions each around one hour

In 89 facial pain patients CBT did not reduce pain but improved patient control and increased quality of life. Harrison et al 1997
The End of an Era: Orofacial Pain Enters the Genomic age

Genetics and Chronic Pain

• Why does chronic (neuropathic) pain develop only in some patients?

• Why some patients do not respond to painkillers or develop side effects?

• Why some pain conditions are mainly found in female?