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Diagnosis and Management of Non-Dental Orofacial Pain

Abstract: Careful history-taking improves diagnosis of non-dental orofacial pain, a not uncommon group of conditions. Accurate diagnosis of conditions such as chronic idiopathic facial pain, temporomandibular disorders, burning mouth syndrome and trigeminal neuralgia is essential if inappropriate dental treatment is to be avoided. There are few investigations to help in the diagnostic process and many of these patients have other forms of chronic pain. All the conditions are best treated using a holistic approach. Drugs, such as tricyclic antidepressants and anticonvulsants, are often effective and surgery can be highly successfully in trigeminal neuralgia. Patient education is paramount.

Clinical Relevance: Although the majority of pain seen in general dental practice is dental in origin, chronic non-dental orofacial pain must be recognized as its management is entirely different.

Dent Update 2007; 34: 134-139

Although the majority of orofacial pain which dentists encounter is of dental origin, recent studies in the UK have shown that chronic orofacial pain of non-dental origin has a prevalence of 7%, and many of these patients will have chronic pain in other parts of the body. Even trigeminal neuralgia, which has been considered to be a rare pain, has recently been shown to be more common than expected when the databases of UK GPs were examined. Patients are often unsure of the cause of their pain and decide for themselves whether or not it is of dental origin. They therefore seek what they think is appropriate care. It is essential to make the correct diagnosis so that the patient may be managed in the most appropriate way.

Some form of classification is useful when attempting to make a diagnosis, to facilitate treatment decisions and predict future outcome. Not only does the pain need to be classified, but its psychosocial impact must be assessed. Facial pain has been classified and diagnostic criteria proposed by both the International Society for the Study of Pain (IASP)[1] and the International Headache Society (IHS),[2] and it is useful to look to these for the diagnostic criteria of rarer forms of facial pain, which will not be discussed in detail in this article. Confusion remains as to the precise terminology of the different forms of facial pain. Recently, Woda *et al*[3] have shown that, using cluster analysis methodology, atypical facial pain, TMD disorders (arthromyalgia) and atypical odontologia cannot be distinguished except by location, and suggest the use of the term persistent idiopathic facial pain, the terminology used by IHS.

A classification shown in Table 1, adapted from Hapak *et al*,[4] has been found to be useful in epidemiological studies and also as an indication of the referral and treatment patterns. Patients who present with histories suggestive of dental pain should be treated by dentists, whereas those with neurological and vascular pains can be referred to neurologists. Patients with pains of musculoligamentous origin are, in general, best referred to oral physicians or maxillofacial surgeons who work in the secondary care system. Rarely, pain may be the primary presenting feature of malignancies, for example, tumours, the maxillary sinus, nasopharynx or posterior fossa.

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Clinical features and investigations

The diagnosis of the majority of these non-dental facial pains is based on a careful history and examination.[5] Time must be spent with facial pain patients to ensure that a full history has been taken, and that the patients have been given time to 'tell their story'. This can be facilitated if patients are given questionnaires to complete prior to the formal consultation. Questionnaires widely used in the UK pain clinics are the Brief Pain Inventory (BPI), which uses a visual analogue scale to determine severity of pain and the effect it has on the quality of life. The Hospital Anxiety and Depression Scale is used to determine if there is evidence for a diagnosis of depression or anxiety. The McGill Pain Questionnaire, used in patients whose English language is adequate, can be used to gauge not only the sensory component of the pain, but also the

Musculoligamentous/ soft tissue	Dento-alveolar	Neurological/vascular
Idiopathic orofacial pain	Pulpal	Burning mouth syndrome
Myofascial - TMD	Dentinal	Trigeminal neuralgia
Internal derangements TMJ	Periodontal	Neuropathic trigeminal pain
Salivary gland disease	Thermal sensitivities	Cluster headache
Oral lesions	Cracked tooth syndrome	Post herpetic neuralgia
Candidiasis	Maxillary sinusitis	Cranial arteritis
Malignancy		Glossopharyngeal neuralgia

Table 1. Classification of orofacial pain.

effective and evaluative aspects. Many of these patients undergo unnecessary investigations in the hope that some cause will be found. Investigation are only likely to be positive if the pre-test probability is high. Radiographs and imaging are of importance in some forms of pain.

Many patients undergo unnecessary dental treatment, including apicectomies and extractions, in the mistaken view that the cause of pain is dental. It can sometimes be very difficult to distinguish between the two. Hence the need for a detailed history.

Questionnaires as an aid to diagnosis

Read through the four case notes in Table 2 which provide the key diagnostic features of four different types of orofacial pain. Note the structured history which has been provided using the main nine headings, under which all pain should be described, and other psychosocial factors which have been provided. From the data provided, try to answer the following questions before reading on.

- What is the diagnosis in each case?
- What are the key diagnostic features of each of them?
- How useful are the measurements you have been given?
- Are there any diagnostic tests you could perform which would help?

Case histories

Case 1

This patient has burning mouth syndrome and the measures given show that this condition, although often thought to be mild, can be severe. Lack of diagnosis and understanding by healthcare professionals and poor treatment can lead to depression. The author has had two patients who have attempted suicide because of their inability to cope with it. It is important to exclude other treatable causes of burning mouth, such as candidiasis, poorly controlled diabetes and haematological abnormalities. This is a neuropathic pain which is found predominately in peri-menopausal women.

Case 2

This patient has myofascial TMD pain which does not affect the joints. The pain is relatively mild in terms of severity but does appear to have a marked effect on her life. Owing to the lack of clinical findings, there are no indications for any investigations. The research diagnostic criteria for TMJ by Dworkin and LeResche[6] provide detailed criteria for all TMD pain.

Case 3

Persistent idiopathic facial pain is the diagnosis for this patient and the pain is very variable in intensity. The intensity probably relates to stress factors as there are significant life events in her history. She has other widespread pains.

Case 4

The most severe but rarest type of pain is trigeminal neuralgia, which classically causes electric shock-like pains which last for seconds but are suicidal in severity. Periods of complete pain remission may occur. The pain is provoked by any light touch or can be spontaneous. As the pain gets more severe and impacts on quality of life, surgical management needs to be considered. A very small proportion of these patients will have symptomatic trigeminal neuralgia due to tumours, multiple sclerosis or AV malformations and so some form of imaging, either CT or MRI, of the brain is necessary.

Management

All these patients need a biopsychosocial (holistic) approach to management as medical treatment alone will not lead to resolution of all symptoms. This method takes into account not only physiological factors, but also patients' social and psychological perspectives. It is essential to acknowledge the reality of the patients' pain and they, in turn, need to understand that they have a chronic condition and have to learn to cope with it. It must be remembered that the psychological and symbolic significance of the head in the development of self esteem, body image and interpersonal relationships confers special characteristics on pain in this area.

The aim of treatment is:

- Maximum freedom from negative impact of pain;
- Increased efficacy of drug therapy by appropriate choice of medication;
- Decreased anxiety, depression;
- Improvement of quality of life through self management;
- To educate the patient and enable control to be regained.

Case	1	2	3	4
Age	50	35	54	57
Gender	Female	Female	Female	Male
Development of pain	Began gradually over last three years and more of a discomfort than pain at first	Began gradually over a number of months	Constant over about 5 years, recent exacerbation which has not settled as usual, has not taken any medication for it as it was not 'that bad'.	First episode of pain 3 years ago beginning suddenly. Lasted for several weeks and then no pain for 9 months. Several similar episodes but shorter periods of no pain. Present episode of pain began 8 months ago.
Character/quality Words from McGill pain questionnaire	Burning, smarting, tender, annoying, tiring	Drilling, pressing, hurting, aching, tender, tiring, annoying, nagging	Aching heavy, nagging sometimes throbbing and stabbing	Quivering, shooting, stabbing, sharp, crushing, tingling, burning, aching, tender, tiring, terrifying, killing, blinding, unbearable
Site and radiation	Tongue only at first but now spreading to lips and palate	Bilateral but worse on the right – pre-auricular area radiating behind and into her ear as well as into the muscles of her face	Bilateral pain both intra-oral and extra-oral whole of face	Left nasolabial area is the trigger point, pain radiates up along the left maxilla occasionally radiating to lower jaw. Pain felt both intra-orally and extra-orally
Severity Visual analogue scale 0–10 cm, 10 cm worst	At its worst 7 cm, average 5 cm	At its worst 5 cm, average of 3 cm, pain never goes completely	Average 3.7 cm, worst 8 cm	Worst 9 cm, average of 4 cm, times when there is no pain
Duration and periodicity	Tends to be continuous but can have days of no pain, worse towards evening	Pain lasts for hours and may be followed by a milder period of pain, sometimes weeks of no pain	Constant with intermittent severe episodes	Each pain episode lasts a few seconds followed by no pain, many episodes a day
Provoking factors	Tiredness	Eating hard things or biting into food	Opening mouth, eating, chewing and touching the area	Eating, talking, shaving, washing face
Relieving factors	Sleep, eating	Rest and analgesics	Nil	No activities
Associated factors	Taste changes, dryness sometimes clenching, peri-menopausal	Clenching habit, sometimes headaches, some neck pain	Has irritable bowel syndrome, back and neck pain, poor sleep	Nil
Effect of pain on life style BPI scale 0–10 cm, 10 cm worst	Makes her very miserable, can affect mood 7 cm and enjoyment of life, 8 cm depressed	Unable to socialize as much as would like, mood and enjoyment of life affected – 6 cm gets easily stressed, no anxiety or depression	Divorced, two children. Significant life events. Does not work, has had some impact on social life and mood and enjoyment of life 3 cm. Mild anxiety, no depression	Considerable effect on quality of life, mood and enjoyment of life 9 cm, took a week off work as telephonist, mild depression
Examination	Parafunctional habit, slightly dry	Tender muscles of mastication, good opening, no deviations	No cranial nerve abnormalities and fully dentate with no dental disease	No cranial nerve abnormalities and fully dentate with no dental disease

Table 2. Data has been gathered using Brief Pain Inventory (BPI) , Hospital Anxiety and Depression Scale and McGill Pain Questionnaire. What is the diagnosis? Read the text to obtain the answers.

Condition	Treatment	Outcome	Evidence Level
Maxillary sinusitis	Nasal decongestants Antibiotics	Effective Very effective	RCT
TMD	NSAIDs Tricyclic antidepressants Occlusal splints CBT	Not effective Effective May be beneficial Effective	RCT RCT SR RCT
Burning mouth syndrome	CBT Gabapetin Topical clonazepam	May be beneficial May be beneficial May be beneficial	RCT, SR RCT RCT
Idiopathic facial pain	Tricyclic antidepressants CBT	Effective Effective	RCT RCT
Trigeminal neuralgia	Carbamazepine Oxcarbazepine Baclofen Lamotrigine Surgery – microvascular decompression – Gasserian ganglion ablative procedures – Gamma knife	Effective May be effective May be effective May be effective At 10 years, 70% pain free; 25% minor complications; 0.4% mortality At 5 years, 48% pain free; 80% minor complications; very low mortality Little long-term data but probably similar to Gasserian ganglion, low on complications – sensory loss	SR Cohort studies RCT RCT Cohort data Cohort data Cohort data
Post herpetic neuralgia	Antidepressants Gabapentin	Effective Effective	RCT RCT
Cranial arteritis	Systemic steroids	Very effective	RCT

Table 3. Evidence-based management of orofacial pain. CBT – Cognitive behaviour therapy; RCT – Randomized control trial; SR – Systematic review.

For management to be successful, it must begin with a discussion about the diagnosis and reassurance that the pain is not a sign of underlying serious disease and that, apart from trigeminal neuralgia, will generally not get worse. A discussion of possible treatment plans should lead to a negotiated treatment plan to which the patient will adhere. This process involves active patient participation, good communication skills and appropriate choice of treatment, based on high quality evidence and increased patient information and self support. Treatments, therefore, will include drug therapy, surgery and some form of cognitive behaviour therapy. The latter has been shown to be one of the most effective.[7] Treatments for individual conditions are shown in Table 3 and there are several systematic reviews or randomized controlled trials that have been performed.[8-14] A search in the Cochrane library will enable you to find the latest systematic reviews, which are regularly updated on a variety of orofacial pain topics **http://www.cochrane.org/**. The abstracts are available for free and all NHS healthcare workers have access to the whole Library. Further details can be obtained from recently updated textbooks, which are also available electronically.[14] Trigeminal neuralgia is one of the few neuropathic pains for which a 100% pain relief can be gained in a high proportion of cases by surgical intervention.

Patients should also be given written materials, as well as details of high quality websites. There are patient support groups, especially for trigeminal neuralgia, website: **http://www.tna.org.uk/** and books have been specially written for patients which are also useful for primary healthcare professionals, eg *Striking Back*[15] and *Insights*.[16] The Expert Patient program may provide another way for patients to improve their self management **www.expertpatients.nhs.uk**.

Summary

An empathic clinician with good communication skills, who is willing to spend time listening to a patient with orofacial pain, can do much to relieve the suffering that persistent pain causes. Accurate diagnosis is key as there are evidence-based management strategies for these patients.

References

1. Merskey H, Bogduk N. *Classification of Chronic Pain. Descriptors of Chronic Pain Syndromes and Definitions of Pain Terms* 2nd ed. Seattle: IASP Press, 1994.
2. Headache Classification Subcommittee of IHS. The International Classification of Headache Disorders. *Cephalalgia* 2004; **24**(1): 1–160.
3. Woda A, Tubert-Jeannin S, Bouhassira D, *et al*. Towards a new taxonomy of idiopathic orofacial pain. *Pain* 2005; **116**(3): 396–406.
4. Hapak L, Gordon A, Locker D, Shandling M, Mock D, Tenenbaum HC. Differentiation between musculoligamentous, dentoalveolar, and neurologically based craniofacial pain with a diagnostic questionnaire. *J Orofac Pain* 1994; **8**(4): 357–368.
5. Zakrzewska JM, Harrison SD *Assessment and Management of Orofacial Pain.* Amsterdam: Elsevier Science, 2002.
6. Dworkin SF, LeResche L. Research diagnostic criteria for temporomandibular disorders: review, criteria, examinations and specifications, critique. *J Craniomandib Disord* 1992; **6**(4): 301-355.
7. Morley S, Eccleston C, Williams A. Systematic review and meta-analysis of randomized controlled trials of cognitive behaviour therapy and

behaviour therapy for chronic pain in adults, excluding headache. *Pain* 1999; **80**(1–2): 1–13.
8. Forssell H, Kalso E. Application of principles of evidence-based medicine to occlusal treatment for temporomandibular disorders: are there lessons to be learned? *J Orofac Pain* 2004; **18**(1): 9–22.
9. Lopez BC, Hamlyn PJ, Zakrzewska JM. Systematic review of ablative neurosurgical techniques for the treatment of trigeminal neuralgia. *Neurosurgery* 2004; **54**(4): 973–982.
10. Zakrzewska JM, Lopez BC. Trigeminal neuralgia. *Clin Evid* 2006; **www.clinicalevidence.org**
11. Buchanan AG, Zakrzewska JM. Burning Mouth Syndrome. *Clin Evid* 2006; **www.clinicalevidence.org**
12. McQuay H, Carroll D, Jadad AR, Wiffen P, Moore A. Anticonvulsant drugs for management of pain: a systematic review. *Br Med J* 1995; **21**: 311(7012): 1047–1052.
13. McQuay HJ, Tramer M, Nye BA, Carroll D, Wiffen PJ, Moore RA. A systematic review of antidepressants in neuropathic pain. *Pain* 1996; **68**(2–3): 217–227.
14. McMahon S, Koltzenburg M. *Wall and Melzack's Textbook of Pain* 5th edn. Oxford: Churchill Livingstone, 2005.
15. Weigel G, Casey KF. *Striking Back. The Trigeminal Neuralgia and Face Pain Handbook*. Florida: The Trigeminal Neuralgia Association, 2004.
16. Zakrzewska JM. *Insights Facts and Stories Behind Trigeminal Neuralgia.* Florida: The Trigeminal Neuralgia Association, 2006.

BookReview

Panoramic Radiology. By Vivian E Rushton and John Rout. New Malden: Quintessence Books, 2006 (145pp., £28 h/b). ISBN 1-85097-080-7.

This small book is part of the Quintessentials for General Dental Practitioners Series, and is the second of the series to concentrate on imaging.

The book is clearly aimed at all members of the dental team as each has their part to play in the production and utilization of quality panoramic radiographs. The style is quite easy reading but, inevitably in a book this size, not always to the same depth as larger texts. References at the end of each chapter guide readers to other sources of information.

The seven chapters are each written by one of the two authors and cover the full range, from history, through technique, to interpretation of panoramic images.

Aim/s and outcomes are provided with each chapter. Chapter 1 covers the background to the technique and probable future developments. The description of radiographic technique in Chapter 2 is quite simplified but sufficient to explain the importance of correct positioning; this is strongly reinforced in Chapter 6. In the chapter on radiographic anatomy, a number of useful reproductions of radiographs and line drawings assist the reader in understanding the portrayal of normal anatomical features and also ghost images. Unfortunately, the illustrations and their matching text are not always on the same page.

Radiation dose and risk are important considerations when deciding on the need and appropriateness of any radiographic examination. The chapter devoted to this commences with a brief explanation of the biological effects of ionizing radiation. Risk changes in relation to age are clearly explained in a table. Key points in reducing dose are highlighted and reference to the simple and effective use of field limitation is particularly welcome, as this requires operator intervention. The reference to constant potential x-ray generation indicates that this enables a shorter exposure time, thereby reducing dose to the patients; whilst true for intra-oral machines, the exposure time of panoramic machines is an independent factor. Tables explain the sources of background radiation and the effective dose and estimated risk of cancer for a number of radiographic techniques. A useful addition in a future edition would be a table showing the dose reduction resulting from the various methods proposed.

The short chapter on the use of panoramic radiography in general dental practice addresses, amongst other things, the issue of 'routine screening'. There is some confusion for the reader in relation to this. Whilst the introduction states the practice of 'routine' oral screening radiography cannot be sanctioned, further on the author states "the routine practice of supplementing the clinical examination of a new adult patient by a 'screening' DPR is well established". Should the reader see this but not the earlier statement they could be misled into thinking that this is an accepted practice.

There is extensive reference to quality assurance, including a detailed explanation of the technique to be followed in the positioning of a patient and the impact on the image of incorrect positioning. The importance of the patient's head position is reinforced on a number of occasions and diagrams illustrate the various relevant reference lines/planes. Unfortunately, the image showing the Frankfort plane shows its anterior end at a slightly higher level than its true position, although the text correctly describes its clinical application. This is a particularly helpful chapter as the result of poor technique has such an influence on the diagnostic value of the image. Issues relating to the care of cassettes and the processing environment are also covered.

The final chapter concentrates on radiographic interpretation of disease. For a small book there is a surprising amount of information. This is very helpful as quite an extensive number of conditions are covered without the extensive detail of larger texts, encouraging the practitioner to dip in for help.

In general, this is a useful and handy book, pitched at a suitable level for the whole dental team.

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