

Headache

- the dental connection

Introduction

The importance of the dentist's role in the diagnosis and treatment of headache is not generally appreciated. Headache has traditionally been regarded by sufferers and medical practitioners alike as being a purely 'medical' problem, and consequently, exclusively medical solutions are usually sought, with the emphasis on trying to develop newer and more effective drugs.

The aetiology and pathogenesis of primary headaches are poorly understood,¹⁻³ and although muscle tension affecting the cranio-mandibular and craniocervical musculature has been shown to be associated with primary headache,⁴⁻⁷ the relative importance thereof is not appreciated by many.

Dentists and dental specialists are trained to diagnose and treat pericranial muscle dysfunction, and consequently, it should be mandatory for a dentist or a dental specialist to be included in any team managing primary headaches.

Classification of headaches

There are two broad categories of headache - primary and secondary.

Secondary headache

Secondary headache is caused by some identifiable underlying medical condition.^{8,9} A thorough

medical examination is the first step in the diagnosis of headache, to exclude the possibility of secondary headache. The causes of secondary headache of greatest concern are:

- Space-occupying lesions such as tumours and cysts.
- Sepsis, eg., meningitis, encephalitis, abscess.
- Stroke - infarction, intracerebral haemorrhage and venous occlusion.
- Subarachnoid haemorrhage.
- Systemic disorders, eg. thyroid disease, hypertension, diabetes, pheochromocytoma.
- Temporal arteritis.
- Traumatic head injuries.
- Cervicogenic headache.
- Ophthalmologic, eg. glaucoma.
- Otolaryngological, such as sinusitis, mastoiditis, and contact point headache.
- Dental, such as periapical and periodontal infections, bite discrepancies, and impacted teeth.

This list is not exhaustive, but includes the most common causes of secondary headache. Secondary headache usually resolves once the underlying pathology has been treated. Only once the presence of secondary headache has been excluded, is the headache classified as a primary one.

Primary headache

Primary headache accounts for the vast majority of chronic headaches. It is mainly in the diagnosis and treatment of primary headache that the dentist has an important role to play.

The most commonly encountered primary headaches are migraine

(MI) and tension-type headache (TTH). MI, TTH, and combined forms of MI and TTH, are diagnosed in over 90% of headache sufferers.

Primary headache disorders are among the most common problems encountered in family practice. In one comprehensive study¹⁰ on a random sample of a thousand men and women between the ages of 25-64, the lifetime prevalence of MI was found to be 16%, and that of TTH 78%. Differences according to sex were significant with a male:female ratio of 1:3 in MI, and 4:5 in TTH. Approximately 18% of women and 6% of men between 12 and 80 years of age suffer from MI.^{11,12} The incidences of both TTH and MI peak between the ages of 30 and 40.¹³⁻¹⁵

The most common precipitating factor of both migraine and tension-type headache was stress and mental tension.¹⁰

Historical perspective

To gain a clearer understanding of why the role of dentists in the treatment of primary headaches has largely been ignored, it is necessary to understand the evolution of the present classification of primary headaches, and the controversy surrounding it.

Galen (160 AD), the Roman physician, coined the term 'hemicrania' for unilateral headache. This term evolved into the word 'migraine', which has been used to describe unilateral headache, accompanied to varying degrees by symptoms such as nausea, vomiting, photophobia, phonophobia, and preceded

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in about 10% of cases, by an aura, most commonly visual. What are today known as 'tension-type headaches' were first described by Osler in 1892, who attributed the pain to 'muscular rheumatism of the head'. This concept was further developed by Tunis and Wolff, who proposed that the vast majority of these headaches were caused by stress-induced involuntary contractions of the scalp and neck muscles.¹⁶

In 1962, the Ad Hoc Committee on Classification of Headache¹⁷ classified headaches along the following lines:

- Category 1: Vascular headaches of the migraine type.
- Category 2: Muscle contraction headaches.
- Category 3: Combined vascular and muscle contraction headaches.
- Category 4-15: Headaches due to specific aetiologies (secondary headaches).

This classification was supplanted in 1988 by a more comprehensive and detailed one, compiled by the Headache Classification Committee of the International Headache Society (IHS).¹⁸ This updated classification also recognised 'vascular' and 'tension-type' headaches as distinct entities. Although the IHS classification was intended primarily as a research tool, it has become widely accepted as an aid to diagnosis, and patients are treated according to the IHS classification of their headache. In reality, however, there is an overlap between the symptoms of vascular headache and tension-type headache.^{4,19-25} In questionnaire surveys,^{26,27} researchers were unable to categorise about a third of the respondents because of symptom overlap, and many patients had symptom combinations for which either diagnosis would have been equally valid.²⁷

The continuum concept of primary headache

There is an influential school of thought, which supports the concept of a 'primary headache continuum'. The continuum theory proposes that there is one primary headache entity, with variation between patients in the severity and nature of the pain, and in the frequency and severity of associated symptoms.^{24,28} Raskin²⁹ wrote 'the similarities between migraine and tension headache appear to be more striking than the differences... Current evidence supports a biologic mechanism of tension headache that is qualitatively similar to that of migraine... The clinical spectrum of benign (primary) recurring headache appears to include classic migraine (migraine with aura) at one end, the variations of common migraine (migraine without aura) and tension headache occupying the vast middle ground, and tension headache at the other end'.

The opposing viewpoint, which is presently more widely accepted in medical circles, is that the different types of primary headache are distinct entities, each with its own aetiology and pathogenesis.^{30,31} This viewpoint has prevailed, even in the absence of hard scientific evidence to support it, and in spite of the considerable body of evidence supporting the continuum concept. Primary headaches were first separated into distinct entities in the initial classification in 1962.¹⁷ Since then, the idea of separate primary headache entities has been repeated so often, and has been championed by so many prestigious people, that it has eventually come to be perceived as truth. Even those headache experts who maintain that primary headaches are distinct entities agree, however, that the pathophysiology of the primary headache disorders is not yet properly understood.¹⁻³

Symptoms during headaches, regardless of classification, vary between attacks. Some patients classified as having TTH report throbbing, unilateral pain, nausea, vomiting, photophobia, and phonophobia, all symptoms usually associated with MI. MI patients, on the other hand, often have attacks which are more characteristic of TTH than of MI.²¹

The viewpoint that MI is a clinically distinct entity has given impetus to the search for a centrally mediated aetiology, and vast amounts of energy and finance have been thrown into the search for chemical imbalances and drugs to correct them. Consequently, the importance of muscle tension and muscle dysfunction in the craniomandibular and craniocervical muscles has been overlooked.

Myofascial pain dysfunction (MPD) and primary headache

The signs and symptoms associated with MPD are commonly found in patients diagnosed with primary headache. Tenderness and dysfunction of the craniomandibular musculature often occurs during MI attacks.^{5-7,32-34} Other signs of myofascial pain dysfunction (MPD), such as temporomandibular joint tenderness or pain, and clenching or grinding habits also occur at significantly increased levels in MI sufferers.²⁰ Intra-oral appliances commonly used in the treatment of MPD have been shown to be effective in reducing pain during MI attacks.^{35,36}

Conversely, headache is one of the most common symptoms in patients diagnosed with MPD.

The Continuum Theory holds that 'vascular' and 'tension-type' headaches are different manifestations of one disease process. The present author holds the view that MPD is also a part of the primary headache con-

tinuum, of which the single most important aetiological factor is muscle dysfunction of the craniomandibular and craniocervical muscles. When the patient is under the care of a medical practitioner, however, the condition is labelled 'primary headache'. When the patient is being treated by a dentist, the condition is called MPD.

It appears that in primary headache, understanding of the aetiology, interpretation of the symptoms, and treatment may be dependent on the orientation of the observer, instead of on the characteristics of the condition itself. 'When a patient presents the symptom of headache as a major complaint, the examining physician or surgeon seeks the answer for the proffered distress within the confines of the examiner's diagnostic acumen ... one sees what one knows.'³⁷

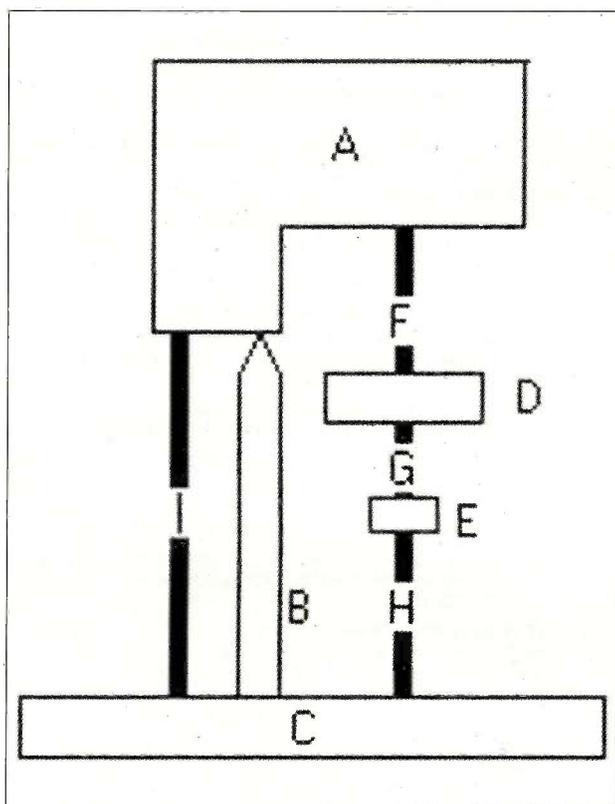


Fig. 1. Diagram showing the relationship between the bony and muscular elements of the head and neck. (A) skull, (B) spinal column, (C) pectoral girdle, (D) mandible, (E) hyoid bone, (F) craniomandibular muscles, (G) suprahyoid strap muscles, (H) infrahyoid strap muscles, (I) cervical muscles.

The muscles of mastication and the cervical muscles

The muscles of the head and neck act together as one integrated functional unit, and any imbalance affecting one part of the system will consequently have an influence on the rest of the system.

The craniomandibular and craniocervical muscles have several functions:

- They are responsible for facial expression.
- They control chewing, swallowing and speaking.
- They are responsible for the posture of the head, and keep it balanced on the top of the spinal column.

The above functions do not however occur in isolation. Although the movements are too small to be seen without special equipment, the head is actually bobbing slightly, as the cervical muscles (Fig. 1I) contract and relax in rhythm with the chain of masticatory and strap muscles (Fig. 1F, 1G, 1H). When the mandible opens and closes, there is alternating contraction and relaxation of the masticatory muscles on one hand, and of the supra- and infra-hyoid strap muscles on the other. This complex co-ordination between the different muscle groups allows the mandible, the larynx, and the hyoid bone to move up and down during function without causing the head to bob every time we eat, swallow, or speak. There is a similar functional relationship between the muscles anterior to the spinal column, and the cervical muscles posterior to the spinal column.^{38,39} Any interference in the fine balance between the various muscle groups may lead to dysfunction of other components of the system.

There is a wide disparity of factors which are known to influence primary headache, the most common being stress and tension, hormonal changes, dietary factors, poor posture, exercise, and sensory stimuli such as flickering or bright light, noise and pungent smells. Of these factors, stress and tension, poor posture, and exercise all affect muscle tone.

It is necessary to eliminate as many of these factors as possible to achieve the most favourable therapeutic result, and dentists are best equipped to treat the abnormal muscle function component.

The role of the dentist

Although the importance of muscle dysfunction cannot be emphasised too greatly, the dentist's role is not confined to the diagnosis and treatment thereof. The system may be further compromised by other dental-related disease processes, and the recognition and treatment of these is essential if the best results are to be achieved.

The mandible functions as a class III lever. The temporomandibular joints are at the fulcrum, the load is on the teeth and the tooth-bearing tissues, and the force is generated by contraction of the craniomandibular muscles.

The joints, teeth and muscles are inter-related components of a functional unit, and the entire system may be compromised by malfunction or instability of any one. In patients with pain caused by muscle dysfunction, it is essential to examine not only the muscles, but also the teeth and the temporomandibular joints.

Indeed, identification and treatment of myofascial pain, temporomandibular joint dysfunction, and dental pathological changes, are frequently sufficient to render primary headache sufferers symptom free.

Conclusion

Primary headache may affect a number of structures and tissues, and may be caused or exacerbated by numerous influences, some known and some as yet undiscovered. The continued isolation of different branches of science is a serious obstacle to scientific progress, and the limited view through the lens of one discipline is often not enough. The answer is not the fragmentation into increasingly isolated specialities and disciplines, but the integration of scientific knowledge for the enrichment of all. The involvement of dentists and dental specialists in the treatment of primary headaches is essential if the best therapeutic results are to be achieved.

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