

Primary Headache Management In Military Medicine

Commander Roy G Beran RANR



Commander Beran is a consultant neurologist and accredited sleep physician; professor in the School of Medicine, Griffith University, Queensland; conjoint associate professor of medicine, University of New South Wales; President of the Australasian College of Legal Medicine; Secretary General of the World Association for Medical Law; and consultant neurologist to the ADF. Within neurology, he is a member of the

Australian & New Zealand Association of Neurologists, corresponding fellow of the American Academy of Neurology, member of the editorial board of a number of national and international journals and is the principal investigator of Strategic Health Evaluators, a private research company.

Correspondence: royberan@unsw.edu.au

Conflict of Interest

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Abstract

Military medicine manages health issues in an otherwise young and healthy population. Headache is the most common cause for neurological consultation. The nature of headaches can change with time but most commonly encountered primary headaches include: tension-type headaches, migraines and headaches with features of both of these. History is the most valuable diagnostic tool but optic fundoscopy is mandatory to exclude raised intracranial pressure. Treatment includes interval therapy for the invasive headache (with simple analgesics or anxiolytics for tension-type headaches, ergots or triptans for migraines and either of these approaches for tension-vascular headaches). Prophylaxis is with tricyclic antidepressants for tension-type headaches, pizotifen for migraines and beta blockers, like propranolol, for tension-vascular headaches. Most important, within military medicine, is the need to appreciate and address the psychological factors that accompany and may provoke tension-type headaches. These are by far the most common form of headaches necessitating medical consultation. Early and effective involvement of counselling is imperative to facilitate optimal patient care and overall efficiency.

Keywords: Military Medicine, Primary Headache, Tension-Type Headache, Migraine, Tension-Vascular Headache, Counselling, Treatment

Introduction

Headache is by far the most common complaint to motivate neurological consultation (1). Nowhere is this more apparent than for the neurologist working within the military medicine environment. This is basically because military medicine is more attuned to the medical management of the otherwise healthy patient (2). Military medicine deals with the management of conditions that occur within a hazardous environment (3, 4). Such consequence include: direct response to trauma; being injured by foreign bodies, such as bullets or shrapnel from explosive devices; working with heavy or noisy machinery; working in an environment causing abnormal pressure affects,

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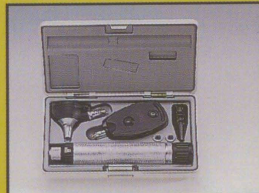
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such as flying at high altitude or diving to depths; or exposure to noxious agents with nuclear or biological weapons(3,4).

It follows that the emphasis in military medicine is on trauma management, surgery and the general practice that is relevant to the care of an essentially healthy young population. Often the psychological factors associated with the response to constant danger or even the consequences of boredom or loneliness are down played, if not ignored, by clinicians.

Many patients who present with headaches, particularly within the military environment, think they have very serious ailments. It is the role of the neurologist to ascertain the nature, cause and management of those headaches. What follows in this paper is an analysis of primary headaches and their management within the military medicine environment.

OVERVIEW OF HEADACHES

Headache already has been identified as the most common provocation for neurological consultation (1). There is an international classification of headaches, produced by the International Headache Society (IHS), which provides taxonomy of primary headaches (5). This provides an international consensus for headache research, to ensure that there is a common understanding amongst researchers when trying to better appreciate headache pathophysiology.

This is less relevant to the coalface clinician and probably even less so within the context of military medicine. There has been an effort to simplify the understanding of headache, to make it more germane to general practice (6). Recent studies have explored such issues as the management of Chronic Daily Headache (CDH) (7, 8), the most refractory form of headache, defined by frequency and duration of headache rather than a specific headache type. CDH is not properly covered in the IHS classification (5). One study of CDH (8) explored the evolution of headaches over a period of more than 20 years. It demonstrated that the nature and classification of headaches may change over their natural history (8). Within the study, neurologists classified patients as experiencing migraine, at the onset of their headache history, yet 20 years later, these same neurologists classified many of these same patients as experiencing headaches that were indistinguishable from tension-type headaches(8). This suggests that the quality and nature of headaches may change throughout their natural history.

The fact that headaches may change in quality and character adds credence to the less scientific notion of headaches representing a continuum of symptoms. This suggests a clinical perspective in which tension-type headache is at one end of the spectrum, migraine is at the other and a concept

of tension-vascular headache, something not included in the IHS classification,(5) being in the middle (6) (Figure 1). This simplifies a therapeutic approach to the management of primary headaches with the adoption of three therapeutic algorithms. The treatment options include that for migraine treatment, treatment of tension-type headaches and the treatment of a headache type that does not fit comfortably into either of these categories, with features of both migraine and tension-type headache (6).

This discussion has focused specifically on primary headache types. It has not considered secondary or symptomatic headaches. It seems tautological, within the context of headaches and military medicine, to discuss headaches consequent to traumatic brain injury, which should be self-explanatory. Similarly, headaches resultant from infection or malignancy, have not featured in this review but they always must be included within consideration of the potential differential diagnoses. It is anticipated that most of these symptomatic headaches will be self evident, if not on history and examination, then on the basis of investigations which might include cerebral imaging or lumbar puncture, amongst other tests. Symptomatic or secondary headaches were deemed extraneous to the purpose of this review, which was to focus specifically on primary headaches that present to a neurological outpatient service, within the context of military medicine.

DIAGNOSIS

The tool that is most necessary for the diagnosis of primary headache is no different to the tool that is necessary for any other neurological diagnoses, namely an adequate history (9). A detailed history is the foundation of proper neurology. An example of this is the sudden onset of excruciating and severe pain, especially in the neck, associated with vomiting and debilitating, blinding pain, which must raise concern about subarachnoid haemorrhage.

To diagnose the headache type, the clinician needs to know: the length of history; the nature of the headache; the situation in which the headache occurs (provocative situations); the site of the headache, be it unilateral, bilateral, retro-orbital, occipital or specifically focal; the quality of the pain, be it suddenly stabbing, constant or pulsating; associated features, such as visual symptoms or gastrointestinal disturbance; precipitating factors (such as foods, lights or stress); relieving factors; frequency of headaches; and duration of those headaches. A frontal, occipital or vertex headache that is bilateral and constant in nature and unassociated with ocular or gastrointestinal features, other than perhaps some blurring of vision or possibly some minor nausea without vomiting, is, more likely than not, going to be a tension-type headache. Often the patient may have difficulty identifying precipitating or relieving factors. The patient who has greater insight may recognise stress as a provocative factor and sleep as having therapeutic benefit.

A unilateral, pulsating headache, associated with teichopsia (zigzag lines bounding a luminous area in the visual field), fortification spectra (seeing a dark patch with zigzag lines like the top of a cavalry fortress), photophobia (intolerance of bright lights), phonophobia (intolerance of loud sounds) and possibly osmophobia (intolerance of smells/odours), together

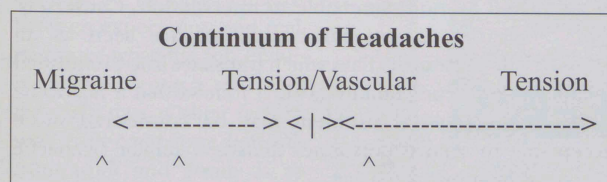


Figure 1 A continuum of headaches from tension-type headaches to migraines with tension-vascular headaches somewhere between the two, reflecting that headaches can move up and down the continuum.

with nausea, vomiting and some relief following vomiting, is more likely to be migrainous in nature. A family history is less helpful in differentiating migraine from tension-type headache. A long history of headaches, over many years, lends weight to tension-type headaches, in preference to migraine, but is also of limited differential value.

Often the patient is under the misapprehension that the severity of the headache is the deciding factor. The patient believes that a more severe headache must be migrainous or symptomatic in nature and this is far from true. Those patients whose features include some of both the tension-type constellation and those more relevant to migraines, but do not fit into either category satisfactorily, fall into that arbitrary convenience category of tension-vascular headache, as suggested above but not included in the IHS classification.

The importance of a good physical examination should not be underestimated, especially the need for proper fundoscopic examination of the eyes. The presence of venous pulsations excludes the presence of raised intracranial pressure and thus limits the risk of space-occupying lesions. It follows that fundoscopy should be a fundamental component of all physical examination of patients with headaches. Focal neurological signs raise the 'red flag' for symptomatic, secondary headaches. Most often the patient who presents with headache has no focal neurological signs and the diagnosis is based solely on history.

TREATMENT

Tension-type headaches are far more common than are migraines (10) and a confident diagnosis of tension-type headache, with associated reassurance, should have high therapeutic benefit. This is not always the case and such diagnosis may be vehemently rejected, particularly within the military medicine context. There are specific issues regarding tension-type headaches and military medicine, which will be discussed below.

Prolonged tension type headaches respond to prophylaxis with tricyclic antidepressants. Amitriptyline, starting at a low dose of 25 mg at night, has a greater potential for sedation and hence is more valuable in patients who report disturbed sleep in association with their headaches. Imipramine, also starting at a low dose of 25 mg at night, is less sedating and thus more beneficial for patients who deny sleep disturbance in association with their tension-type headaches. Interval treatment for tension-type headaches may be as simple as the use of paracetamol or other commonly used analgesics. Short-acting anxiolytics, such as the benzodiazepines, (for example lorazepam given as 1 – 2 mg stat) may provide additional benefit to relieve tension-type headaches. It is important to appreciate the potential addictive nature and tolerance that attaches to benzodiazepines, particularly in patients who have tension-type headache, which may reflect the presenting symptoms of underlying psychological problems.

Migraines respond to the early intervention with either medications including ergot derivatives, possibly in combination with other agents such as caffeine, or alternatively with triptans. Prophylaxis may be provided using pizotifen given in adequate doses. It is important to appreciate that while pizotifen (starting at a low dosage of 0.5 mg given twice daily.) offers very

effective prophylaxis for migraine, it is far less effective in the treatment of tension-type headache and thus differentiation between migraine and tension-type headache is fundamental to the choice of optimal treatment.

Tension-vascular headaches respond to interval therapy as per tension-type headache or migraine, plus judicious use of propranolol (starting at a low dose of 40 mg ½ twice daily.) as effective prophylaxis. As with the use of the tricyclic antidepressants, the use of pizotifen or beta blockers, such as propranolol, it is important to appreciate that the doses must be adequately titrated to the patient's need before efficacy is achieved. Maximum doses as high as 250 mg of tricyclic antidepressants, given as a single dose nocturnally; 4.5 mg of pizotifen given in divided doses three times daily.; or 160 mg of propranolol given four times daily. (up to 640 mg per day) may be required before efficacy is achieved. It is imperative to 'start low and go slow' with incremental increases titrated to need but to recognise that failure of therapy is often not the result of the use of inappropriate medications but rather a lack of achieving the adequate dosage necessary for the individual patient(6). Clear understanding of the adverse drug effect profile of each medication is mandatory, especially the potential for propranolol to exacerbate heart failure or asthma (the latter being more likely within the military medicine context). Patients need to be advised of these potential adverse events and same documented in their medical records. Those receiving tricyclics should be warned of delayed response, taking up to two weeks, irrespective of adverse effects being experienced.

SPECIFIC MILITARY MEDICINE CONSIDERATIONS

The foregoing reviewed diagnosis and treatment of the most common primary headaches encountered within both the community in general and military medicine in particular. It adopted a broad-brush approach but avoided specific consideration of military medicine. This recognised that primary headaches, which occur within the military context, are no different to those which occur within the general community. What is different, within military medicine, is the overarching emphasis upon the need for physical fitness and a healthy attitude (11). An underlining pre-requisite is for service personnel to maintain psychological strengths, which are as important to efficiency as is physical fitness. Emotional stability and strength are considered a fundamental pre-requisite, while stamina and endurance are potentially achievable through physical training (12). Emotional well-being is less well understood amongst military personnel because it is less quantifiable and hence is more abstract (13).

Physical fitness is more obvious and results from factors imposed from without and hence physical complaints may be perceived as more amenable to intervention. Conversely, psychological or emotional complaints are seen as an idiosyncratic personality flaw, which translates into diminished reliability and dependability (14). It follows that a headache caused by a physical problem may be considered more acceptable to service personnel than is a similar headache provoked by stress or tension.

Service personnel often prefer to present with a complaint of a physical nature, rather than one potentially of emotional

aetiology (15). It follows that the clinician must first confirm the diagnosis of tension-type headache and then must explore the potential causes for same, not ignoring the very real stresses and emotional factors that occur in the patient's circumstances. Appropriate management may necessitate the early involvement of a counsellor, psychologist or psychiatrist. Early recognition and identification of potential psychological factors may expedite earlier acceptance of intervention and better therapeutic outcome.

Such intervention does not negate the previously discussed approach to the routine management of tension-type headaches with the judicious use of tricyclic antidepressants for prophylaxis. These may have additional benefits, beyond headache management, as they are antidepressants as well as muscle relaxants, hypnotics, tranquillisers and pain relievers. One should not ignore that the use of psychotropic medications, such as antidepressants, may have a negative impact on either deployment or garrison duties. It is important to emphasise the short term nature of the medications, aimed at prophylaxis to achieve a period of headache freedom followed by judicious withdrawal upon proven efficacy and headache relief.

Particularly within the military medicine context, which operates within a rigid hierarchical structure, it is imperative to not only make the fundamental diagnosis, such as tension-type headache, but also to be receptive to other fundamental problems which may contribute, such as work related factors. Early intervention must also be cognizant of the career factors. The clinician needs to try to avoid the fracturing and dislocation of service careers. These rely upon the individual being accepted both by peers and within the hierarchical structure, which may underpin the headaches

People within the military often feel disempowered due to a perceived lack of control of their own future. Issues of appreciation and respect by superior ranks are often identified as causing frustration. A lack of equality between expectation and realisation of what the job entails is also frequently a source of dissatisfaction. Other factors, such as the competing demands from work and family is an additional consideration when evaluating possible causes for stress and dissatisfaction.

The notion that headache is perceived as a physical complaint makes the presentation with headache, even if ultimately diagnosed as tension-type headache, a more acceptable way to call for help. The discussion thus far has adopted a holistic approach, but this ignores that the 'whole' is made up from its individual parts. The importance of the whole of the defence force is paramount, over the needs of the individual. This leaves the individual vulnerable when contemplating assistance for personal psychological factors. This, in turn, requires an extra level of awareness on the part of the attending clinician.

Often the busy clinician lacks the time and expertise to adopt a more individualised approach. The pragmatic clinical concept of 'diagnose and treat' is also more attuned to physical conditions. Tension-type headaches are relatively easy to diagnose and the prescription of immediate pharmacological intervention and prophylaxis is very straightforward. The downside is that this approach ignores the underlining reason for the member's presentation. It does nothing to address the stressors that provoked the headaches. The provision of pharmaceuticals addresses the superficial reason for



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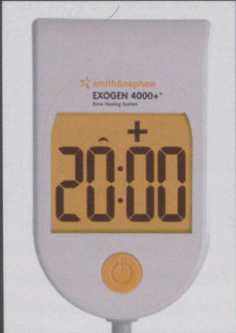
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Headache remains the leading cause for seeking neurological consultation, both within and without military medicine.

presentation but ignores the more likely underlying problem for which the member also sought help, although he/she may not have admitted same, even to him/herself.

The reason why young men and women join the defence forces is often unique to that individual. Some join to maintain a proud family tradition of serving their country. Others join to run away from an abusive or hostile home environment. There are many other reasons for enlisting and their identification may provide the basis for effective intervention. Often a glamorous "Hollywood" image bears no relationship to the reality that is encountered within the forces. Identifying these issues may necessitate involvement of a specialist trained in this area.

The member who presents with tension-type headache may not be aware that the headache represents a more acceptable method of calling for help. The member is subject to the same influences, regarding the physical versus the psychological issues, as exist throughout the defence forces. The member may actively reject any notion that pain, hence perceived as a physical complaint, can be anything other than a physical complaint. This may present the first impenetrable barrier to the provision of appropriate intervention. It is at this level that the clinician may serve a most valuable therapeutic role. The member needs to accept the wisdom of involving a counsellor and the clinician has the capacity to open this door.

The clinician provides an invaluable bridge between the diagnosis and the teasing out of the real underlying problems and hence provision of therapy. The patient with tension-type headaches still has pain and is still in need of physical help. The use of tricyclic antidepressant medications is still a useful tool in the headache management. It is not an 'all or nothing' phenomenon. What is required is a partnership between the doctor and counsellor (not ignoring the fact that the counsellor also may be a doctor). This allows the maintenance of self-respect as well as the respect from peers as there remains an acceptance of the physical complaint of tension-type headaches. What it offers is the opportunity for a two-pronged attack, which treats both the presenting complaint while concurrently addressing the underlying root cause.

CONCLUSIONS

Headache remains the leading cause for seeking neurological consultation, both within and without military medicine.

The approach to diagnosis and treatment of primary headaches is the same, both within and without military medicine. There is a major difference between military medicine and civilian medicine in that in the military there is potentially a greater imbalance between the relevance associated with physical, as compared to emotional/psychological complaints. An early appreciation of potential psychological factors, which are fundamental to the aetiology of tension-type headaches, particularly within the military medical environment, will allow far more effective and efficient intervention. Early involvement of councillors, psychologists or psychiatrists may better assist in the maintenance of career paths and a more satisfactory overall outcome. This does not exclude the appropriate use of pharmacological agents but aims to balance these with adjunctive counselling for better people management and prognostic outcome both for the individual patient and for the service in which that patient operates.

REFERENCES

1. Dodick DW. "Clinical clues and clinical rules: primary vs. secondary headache" *Adv Stud Med*; 3:S550-S555, 2003
2. Bleier J, Waller M, McGuire A, Treloar S, McFarlane A, Dobson A "the near north area of influence study group: comparison of health outcomes for personnel who had not been on a military deployment compared with those who had been to East Timor and the Middle East area of operations" *J Military and Veterans' Health*; 18 (1):9, 2010
3. Martinowitz U, Zaarur M, Yaron BL, Blumenfeld A, Martonovits G "Treating traumatic bleeding in a combat setting: possible role of recombinant activated factor VII" *Mil Med* Dec 169 (12 Suppl): 16-8, 4, 2004
4. Baker MS "Creating order from chaos: part 1: triage, initial care, and tactical considerations in mass casualty and disaster response" *Mil Med* Mar; 172 (3): 232-6, 2007
5. Headache Classification Subcommittee of the International Headache Society "The international classification of headache disorders". (2nd edition) *Cephalalgia* 24 (Suppl 1): 9-160, 2004
6. Beran RG "Headache" *Medical Observer* 9 May; 31-33, 2008
7. Spira J P and Beran RG "Gabapentin in the prophylaxis of chronic daily headache: A randomized, placebo-controlled study". *Neurology* 61(12):1753-1759, 2003
8. Beran R G and Spira P J "Levetiracetam in chronic daily headache: a double-blind, randomised, placebo-controlled study (The Australian Keppra Headache Trial [AUS-KHT])" *Cephalalgia* 31 (5): 530-536; 2011
9. Beran RG *Neurology for GPs* Elsevier, Sydney, 2011 (In Press)
10. Fong, K-Y J. "Recent advances in the diagnosis and management of primary headache disorders". Medical Session June 2002. Available at: <http://www.fmshk.com.hk/article/821.pdf> (accessed 25 March 2008)
11. Council PaNR. Assessing Fitness for Military Enlistment: Physical, Medical and Mental Health Standards. In: Sackett PR, Mavor AS, editors. Washington: The National Academies Press; p1, 2006
12. Roy TC, Springer BA, McNulty V, Butler NL. Physical Fitness. *Military Medicine*; 175:14-20, 2010
13. Matthews F, Stone D, Williams P. Achieving health and human development: VCE units 1 and 2. Melbourne: Macmillan Education; p25, 2003
14. Pflanz SE, Ogle AD. Job Stress, Depression, Work Performance, and Perceptions of Supervisors in Military Personnel. *Military Medicine*; 171(9):861-5, 2006
15. Bergen Lv. Before My Helpless Sight: Suffering, Dying and Military Medicine on the Western Front, 1914-1918 (The History of Medicine in Context). Ashgate Publishing; p. 404, 2009