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Primary Headache Disorders

List of Objectives:

1. Participants will be able to identify the two different categories of primary headache disorders.
2. Participants will be able to differentiate between a migraine and a headache of a patient/athlete.
3. Participants will be able to list two forms of migraines & headaches that a patient/athlete may possibly have.

Of all medical conditions causing pain and disability, headache may be the most common, affecting 40 to 50 million Americans. In the athletic setting, posttraumatic headache, a type of secondary headache disorder, is often seen and recognized as a debilitating and performance limiting condition secondary to mild head injury. Secondary headache disorders are caused by trauma to the head, neck or face, flu or sickness with fever, or infection inside the skull, teeth, eyes or face. Headache and other symptoms related to mild head injury, have recently received a great deal of attention in medical research and the news media. A better understanding now exists in the role it can play, along with other symptoms, in potential risks in early return to athletic participation after mild head injury. Secondary headache disorders make up approximately ten percent of all headaches. They are often more easily understood by the afflicted individual, as a known underlying condition exists. Headaches presenting without evident trauma or cause present an often puzzling situation in regard to diagnosis, treatment and understanding by both the afflicted individual and the health care provider. These primary headache disorders are often overlooked and misunderstood as "acceptable", frequent maladies which should not effect work or play status. A greater understanding of the types, characteristics, severity and treatment options and errors in these disorders is imperative for both the athlete and their health care provider.

Seventy- six percent of women and fifty-seven percent of men have reported experiencing at least one significant headache per month, and greater than ninety percent of both sexes experience a noteworthy headache at least once in a lifetime.^{14,15} A recent report further supports these statistics, stating that in the past year approximately ninety percent of men and ninety-five percent of women had at least one headache.^{1,15,18} Limiting this population further, Scher and Stewart found that headaches are most frequent in Caucasians with less than a high school education. Of equal significance is the fact that greater than ninety percent of those suffering from headache illnesses have never sought the advice of a specialist.¹⁴ A variety of theories exist on the causes of this malady including prolonged teeth clenching, pericranial muscle tightness, left handedness, genetic disposition, gender, race, stress, emotional factors, menstruation, certain foods or odors, central nervous system disturbances, serotonin levels, trigeminal nerve disturbance, educational background, weather changes, smoking, alcohol, caffeine, medications, visual stimuli, routine changes and drug misuse.^{1,6,8,14,18} Adding to the puzzle is the varying types and characteristics of primary headache disorders.

A primary headache disorder, one in which no underlying disorder or trauma exists, accounts for about ninety percent of all headaches. Primary headache disorders may generally be distinguished as being either episodic, such as migraine or cluster headache, or chronic, such a chronic tension-type headache. Current classification of headache is based on the proposed classification of the International Headache Society. This classification has thirteen categories of headache, which are subdivided into 129 types.¹⁴ This document will address the aforementioned primary headache disorders; migraine, cluster and tension.

As many as six percent of all men and eighteen percent of all women, or about twelve percent of the American population, experience a migraine headache at some time in their life. Between seventy and ninety percent of migraine sufferer's report family members also suffer from them.^{14,18} It is often incorrectly assumed that these types of headaches are a result of stress, sinuses, or other related factors. One of the most distinguishing

features of a migraine is the potential, transient physical disability, which may accompany this type of headache. Individuals who experience migraines, or migraineurs, have different experiences when attacks occur, but they share a common theme: headache.

Early in migraine attacks, many migraineurs experience a warning sign, called an aura. An aura can produce symptoms that appear to involve both chemical and electrical changes in the brain, as well as reduction in the flow of blood to parts of the brain. These changes can temporarily effect vision, causing flashes of light, zigzag lines, or just vague awareness that all is not right. Some individuals experience numbness, difficulty annunciating words or forming thought patterns. Other individuals report mood swings and/or irritability before attacks. Migraine headache with any of these symptoms is known as migraine with aura. Some migraineurs experience a migraine episode and it's varying symptoms without this warning; this is known as a migraine without aura. The typical symptoms of nausea, vomiting, severe, pulsating or throbbing unilateral pain, photophobia, phonophobia, lightheadedness or dizziness can be present with any type of migraine. Other reported symptoms include forgetfulness, blurred vision, diplopia, hemiparesis, ataxia, diarrhea, dehydration, sleep disturbances, abdominal cramping, epistaxis and nasal stuffiness.^{14,18}

Migraine is a disorder in which headache is the primary symptom. This is caused by extracranial arterial vasodilation, extracranial neural inflammation and decreased inhibition of central pain transmission. Associated symptoms are probably caused by sympathetic activation of the peripheral (nausea and vomiting) and central neural levels (photo- and phonophobia). An aura is most likely caused by a similar mechanism that causes excitation or depression.¹⁷ Varying theories of migraine pathogenesis exist, while agreement is in similarity of symptoms and types. There are several types of migraine headaches; menstrual, abdominal, basilar artery, ophthalmoplegic and hemiplegic.

Estrogen level fluctuations seem to bring on attacks in females but are not completely understood. Before puberty, migraine incidence is about equal among males and females, but becomes two to three times more prevalent among females after it's occurrence. It is thought to be due to the female sex hormone estrogen and it's effect on brain chemistry. Many females report changes in their headache patterns during pregnancy, menopause and with use or changes in birth control pills. Some women report the most severe attacks during or prior to their menstruation period. Migraines that only occur during menses are known as menstrual migraines.

Abdominal migraines last a few hours and are most common in young females. Pain presents in the upper abdomen with concomitant headache.³ Diagnosis is generally made from family history along with simultaneous headache and abdominal pain. The main concern in this type of migraine is the potential of the patient to be subjected to unnecessary surgery for abdominal complaints.

Another type of migraine that seems to limit itself to a younger population is the basilar artery migraine. Headache is most often limited to the back of the head, caused by diminished blood flow to the brain from the basilar artery. Symptoms include diplopia, nausea, unsteady gait, slurred speech and confusion. This condition is often confused with drunkenness.³

Another rare type of headache that occurs in children and young adults is ophthalmoplegic migraine. Associated with the headache is temporary drooping of the eyelid, pupil dilation and paralysis of the eye muscles caused by an irritation of the oculomotor nerve.^{3,11} Sufferers usually have a family history of similar attacks.

Hemiplegic migraine is a rare type of migraine in which unilateral paralysis occurs to an arm or leg. Paralysis can occur before, during or after the onset of headache. Attacks are typically temporary, but may be prolonged and in rare circumstances may cause permanent paralysis.

Many people who have occasional attacks of migraines eventually experience frequent, yet milder daily headaches. Migraine headaches, as an entity, may occur frequently but are not daily. This mild daily form of headache, previously thought to be chronic tension-type headache, is now considered a normal progression of migraine and is termed progressed migraine.

Recently, the International Headache Society published criteria for diagnosis of migraine that are widely accepted. If a headache has any two features from Group A, plus any one feature from Group B, a migraine is present.¹

Group A

- Pain is unilateral
- Pain is throbbing
- Pain is severe enough to interfere with or prevent normal daily activity
- Pain is worsened by activity

Group B

- Nausea or vomiting presents with pain
- Sensitivity to light and noise presents with pain

Family history is reported as an important diagnostic tool in most cases as well.^{1,3,5,14,18}

Treatment of a migraine headache varies greatly between both migraineurs and medical practitioners. Certain factors must be addressed before a treatment plan is implemented. Headache severity and intensity are important considerations when deciding this plan. Medication, non-medical therapy or a combination of the two can be utilized, dependent on the individual case.¹⁴ Non-medical therapy can include ice applications, refuge in a cool, dark and quiet place, utilizing biofeedback, relaxation techniques, smoking cessation, and stress management training. Medication can address either the acute symptoms or can be prophylactic.

Moderate intermittent attacks can utilize simple analgesics, nonsteroidal anti-inflammatory drugs (NSAID's) or oral or nasal antimigraine medications (ergotamine tartrate, isometheptene [Midrin], or dihydroergotamine [DHE]). These medication options can also be utilized in moderate to severe intermittent attacks or stronger NSAID's, such as indomethacin or mixed analgesics, such as Fiorinal and Esgic, may be treatment choices. Severe intermittent attacks may require rectal or parenteral administration of some of these medications or the utilization of opiates. Oral, rectal or parenteral neuroleptics or antidiarrheal agents are often utilized when nausea, vomiting or diarrhea are present.¹⁴

Migraine prophylaxis has traditionally included b -adrenergic agents, calcium channel blockers, antidepressants, ergot derivatives and NSAID's. b -adrenergic agents, such as propranolol and nadolol, have been the mainstay in prophylactic medication. Antidepressants are often effectively utilized in combination with b -adrenergic agents or calcium channel blockers. Calcium channel blockers, such as Verapamil, ergot derivatives and NSAID's are not generally as effective as b -adrenergic agents, and are utilized when b -adrenergic agents are not effective or contraindicated. The use of any of these medications requires close and frequent observation and evaluation by the prescribing physician.^{14,16}

It is important for the medical practitioner to emphasize alternative medications or an occasional "drug holiday" with long term symptomatic prophylactic use. There is often a natural reluctance to give up medications that were effective in the past (with any type of chronic headache), even if they have become ineffective. Medications, especially over the counter NSAID's are often overused and can cause a condition called rebound headache. The features in individuals with rebound headaches are daily or near-daily occurrence, the utilization of relief medication on a daily or near-daily basis, frequent depression, sleep disturbances and a frequent family history of headaches. Rebound headaches may have features of tension and/or migraine headaches.^{1,16} Initial treatment for this disorder is cessation of the daily medication. Milder over the counter medications can usually be withdrawn abruptly and comfortably with the use of antimigraine medications. Brief hospitalization may be required for withdrawal from stronger medications requiring barbiturates, codeine, narcotics or ergotamine tartrate. Once the relief medication has been withdrawn from, daily prophylactic medications may be utilized.¹⁴

Individuals who suffer from any type of this disorder may often find certain "triggers" which cause its onset. These triggers are thought to cause imbalances of naturally occurring chemicals in the body, increasing blood flow in the brain. Onset may be caused by any, or a combination of any, of the numerous aforementioned causes. These triggers may take years for a migraineur to discover and are often unique to the individual. Prevention of this disorder can be attained to a degree with avoidance or moderation of those substances or situations that have caused the headache onset.

Cluster Headaches are another episodic primary headache disorder, but are relatively rare. They effect about one percent of the population, eighty-five percent of which are males.¹ This type is distinct from migraine or tension headaches. Pain is extremely severe but brief, lasting thirty minutes to two hours.^{1,14} Pain centers around one eye and may cause eye inflammation and watering with nasal congestion to that side. The distinct presentation of these headaches lies in their onset in clusters, lasting over weeks to months, often occurring at the same times daily. Sufferers often have a history of heavy smoking and drinking. Alcohol can trigger the attacks. They can be confused with sinus headaches. Treatment may include NSAID's and lifestyle modification options.

Chronic tension-type headaches are chronic headaches having a non-specific ache or sense of tightness, pressure or constriction, varying widely in distribution, frequency and intensity. These headaches were previously known as tension, muscle contraction, stress, ordinary or psychogenic headaches.¹⁶ Chronic tension-type headache is known by virtually everyone and is probably the most common type of pain. Seventy-eight percent of the population has lifetime prevalence, while females are more commonly afflicted than males and younger subjects more frequently effected than older subjects are.^{10,18} They are typically mild, often being described as having a clearly describable band-like distribution around the head, suggestive of muscular involvement. Unlike migraine, pain is bilateral and non-throbbing and does not aggravate the daily routine. Nausea may be present but vomiting is typically not. Pericranial muscle tenderness may be present and is a distinct feature in this type of headache.⁷

Similar to migraine headaches, it is suggested that genetic factors, similar to those in seizure disorders, are involved in chronic tension-type headaches.¹⁵ The mechanism of these headaches can be multi-factorial. Stress and mental tension seem to be two precipitating factors. Psychological factors have been overemphasized in this disorder. In a recent study by Ashina et al., muscle hardness and tenderness of the pericranial muscles were described as a precipitating factor in headache onset. The study suggests increased muscle hardness in women versus men (possibly explaining the higher incidence) but also an increase in sufferers of chronic tension-type headaches. A similar study by Clark et al. suggested that sufferers utilize their temporalis muscles with less efficiency. Many feel that cervico-thoracic posture, teeth clenching, chewing and talking along with stress and mental tension are factors in onset. Recent data suggests that some form of sensitization of the trigeminal nerve may cause basic pain mechanisms.⁷ This however is in the early stages of research.

Treatment, similar to migraine, can consist of medication, non-medical (physical) therapy or a combination of the two.^{9,14,16} Drug use must be monitored as this type of headache can develop chronic use leading to overuse. Typically NSAID's, analgesics and occasionally narcotics are utilized. Analgesics should be limited especially in attempting to reduce drug induced or rebound headaches.¹⁶ Physical therapy can include modality treatments such as ice and heat applications, ultrasound, electrical stimulation, postural improvement, spinal manipulation and addressing trigger points. Other treatments have included biofeedback, reflexology and relaxation techniques. The emphasis on daily postural re-education (avoiding sitting or working in prolonged neck flexion i.e.: computer position or reading), stretching and isometric exercise should be an integral part in attempting to prevent the occurrence of these headaches.

Management and prevention of these problems can occur when those afflicted seek the advice of a physician. Thorough history taking, patient and family education and follow-up can assist in reaching therapeutic and preventative goals. The question then arises for patients and acute allied health care providers in regard to referral necessity. The following guidelines by the American Council for Headache Education¹ have been developed for headache sufferers. Any of the following symptoms should prompt the sufferer to seek, or be prompted to seek, physician advice.

- Three or more headaches per week
- Use of pain medication daily or almost daily for headaches
- Requirement of greater than required dose of over-the-counter medication to relieve headache symptoms
- Stiff neck and/or fever present in addition to headache
- Headache accompanied with shortness of breath, fever, and/or unexpected symptoms that effect eyes, ears, nose, or throat
- Dizziness, unsteady gait, slurred speech, weakness or changes in sensation in addition to headaches
- Confusion or drowsiness with headache
- Headache begins and persists after injury
- Headache is triggered by physical exertion, coughing, bending, or sexual activity
- Headache gets worse or won't go away
- Headache changes your character
- Persistent or severe vomiting accompanies headache
- "First and/or worse" headache
- Headaches began after the age of 50

Headaches are a common entity occurring in the daily lives of many Americans. A thorough understanding of the types, causes, specific symptoms and management are essential for health care providers. Following referral guidelines and educating patients are the first defenses in preventing medication misuse and chronic manifestation of headaches and keeping sufferers in the class room, work place and on the playing field.

-Andy Smith, M.S., A.T.,C.

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Primary Headache Disorders

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| 6. A B C D E | 13. A B C D E |
| 7. A B C D E | 14. A B C D E |

Mark Answers Above.

Primary Headache Disorders

1. Secondary headache disorders are often better understood by both the sufferer and health care practitioner as:

- A** They are much more common and greater medical research has bettered the understanding of underlying pathology
- B** A condition that should not preclude athletic participation
- C** A diagnosed underlying condition is generally made
- D** They occur in a distinct population
- E** Make up approximately 90% of the afflicted population

2. Approximately 90% of _____ :

- A** Men have had a noteworthy headache at least once
- B** All headache sufferers have not sought the advice of a specialist
- C** All headaches are primary headache disorders
- D** ALL
- E** A & B Only

3. Photophobia , a common symptom associated with migraine, is:

- A** warning, or aura, that severe migraine is ensuing
- B** Caused by central neural level sympathetic activation
- C** Caused by peripheral neural level sympathetic activation
- D** A & C
- E** B & C

4. Which type of migraine is not considered more common in adolescents and young adults?

- A** Basilar artery
- B** Abdominal
- C** Hemiplegic
- D** Ophthalmoplegic
- E** ALL

5. Which type of migraine can occur on a daily basis?

- A** Chronic tension-type headache
- B** Rebound
- C** Basilar artery
- D** Cluster
- E** Progressed

6. Chronic tension-type headaches differ from migraine headaches.

- A As they will not generally effect the daily routine
- B As pain is bilateral
- C As men suffer more often than women
- D ALL
- E A & B

7. Which type of medication is often overused and can become the cause of rebound headaches?

- A Opiates
- B NSAID's
- C Anti-migraine prophylaxis
- D Narcotics
- E b -adrenergic agents

8. Which statement is not true about cluster headaches?

- A Males suffer more frequently than females
- B Mild pain lasts 30 minutes to 2 hours
- C Alcohol can be a "trigger"
- D They effect one eye and may cause watering and nasal congestion
- E Onset may last weeks

9. Recent data suggests that some form of sensitization of the trigeminal nerve may be the of cause basic pain mechanisms in:

- A Cluster headaches
- B Basilar artery migraines
- C Chronic tension-type headaches
- D Rebound headaches
- E Ophthalmoplegic migraines

10. Genetic factors are involved in which type headaches?

- A Migraine and cluster
- B Migraine and rebound
- C Chronic tension-type and progressed
- D Chronic tension-type and cluster
- E Chronic tension-type and primary

11. Calcium channel blockers are:

- A Utilized secondarily, when b -andrenergic agents are contraindicated or ineffective
- B Are the most common type of migraine prophylaxis
- C The first drug choice when in combination with Anti-depressants
- D Utilized during migraine attacks
- E None

12. Which is not a generally utilized non-medical treatment for migraines?

- A Smoking cessation
- B Biofeedback
- C Postural improvement
- D Resting in a cool, dark and quiet place
- E Stress management

13. Which symptom should automatically preclude any athletic participation in a symptomatic migraneur?

- A Sleep disturbances
- B Pain worsened by activity
- C Unilateral throbbing pain
- D Forgetfulness
- E Nasal congestion

14. Smoking cessation would be a feasible treatment option in which type of headaches?

- A Cluster
- B Chronic tension-type
- C Migraine
- D Rebound
- E A & C

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