

بِسْمِ اللّٰهِ الرَّحْمٰنِ الرَّحِیْمِ

Headache Attributed to Cranial or Cervical Vascular Disorders

II. The Secondary Headaches

- 5) Headache attributed to head and/or neck trauma
- 6) **Headache attributed to cranial and/or cervical vascular disorder**
- 7) Headache attributed to nonvascular, noninfectious intracranial disorder
- 8) Headache attributed to a substance or its withdrawal
- 9) Headache attributed to infection
- 10) Headache attributed to disturbance of homeostasis
- 11) Headache or facial pain attributed to disorder of cranium, neck, eyes, ears, nose, sinuses, teeth, mouth, or other facial or cranial structures
- 12) Headache attributed to psychiatric disorder
- 13) Cranial neuralgias and central causes of facial pain
- 14) Other headache, cranial neuralgia, central or primary facial pain

Headache Attributed to Cranial or Cervical Vascular Disorders

- 1) Aneurysms and Arteriovenous Malformations and Thunderclap Headache
- 2) Subarachnoid Hemorrhage
- 3) Parenchymal Hemorrhage
- 4) Cerebral Ischemia
- 5) Carotid and Vertebral Artery Occlusion and Dissection
- 6) Giant Cell Arteritis

- 1. Aneurysms and Arteriovenous Malformations and Thunderclap Headache.**

Aneurysms

- **Intracranial aneurysms** are rarely responsible for headache unless they rupture.
- **Rapid enlargement** of an aneurysm may produce local pain by pressure on a cranial nerve, especially the oculomotor nerve, or on other pain-sensitive structures.
- **This is most common** with aneurysms of the internal carotid and posterior communicating arteries.
- **Enlargement of an aneurysm** may occur shortly before rupture, and the local pain is therefore an important clinical sign.

Aneurysms (cont.)

- **Cerebral aneurysms** are not a cause of recurrent migraine-like headaches, even when the headache attacks are confined to one side.
- **The prevalence of migraine** in patients with subarachnoid hemorrhage due to a ruptured aneurysm is similar to the prevalence of migraine in the general population.

Arteriovenous Malformations (AVMs)

- Parenchymal arteriovenous malformations (AVMs) rarely cause pain before rupture.
- Very large lesions can be associated with ipsilateral or bilateral throbbing cephalalgia, but they rarely cause a migraine-like syndrome.
- Large AVMs can usually be suspected by the presence of a cranial bruit or of the classic triad of migraine, seizures, and focal neurological deficits.
- The prevalence of headache in patients harboring AVMs is probably no higher than that in the general population.

Aneurysms and Arteriovenous Malformations

- **The myth has developed** that headaches of a migrainous type, if consistently on one side of the head, could be due to an aneurysm or an AVM.
- **In the past,** this belief led to many unnecessary arteriograms.
- **The worry expressed by patients** and physicians that a recurrent headache might be due to an aneurysm or AVM is now usually easily resolved by obtaining a cranial MRI scan or magnetic resonance angiogram (MRA).

Aneurysms and Arteriovenous Malformations (cont).

- **Any aneurysm or AVM responsible** for a recurrent or persistent headache has a very high probability of being seen.
- **Both aneurysms and AVMs** can bleed in a way that produces a less than catastrophic subarachnoid hemorrhage.
- **These small warning** leaks can result in one or more sentinel headaches.
- **Each may be** relatively mild and short-lived.
- **They usually have a sudden,** but not very dramatic, onset.
- **Identification of the sentinel headache** is important but is very difficult.

Aneurysms and Arteriovenous Malformations (cont).

Patients who do not usually have headaches should be examined whenever:

1. They report new onset of headaches or even a single episode if it was described as "the worst headache I've ever had" or
2. If it was associated with neck stiffness or pain, transient neurological symptoms (e.G., Extraocular nerve palsy), or fever.

Aneurysms and Arteriovenous Malformations (cont).

- **Patients in whom there is any suspicion of a sentinel** bleeding episode or who describe a recent thunderclap headache should be examined with CT scanning to detect blood in the subarachnoid cisterns.
- **If the scan is normal,** the continuing suspicion of a warning bleeding episode should lead to an examination of the CSF.
- **If the CSF is blood-stained or xanthochromic** or if, despite the absence of positive findings on the lumbar puncture, there is still a suspicion of a sentinel hemorrhage, an MRA or cerebral angiogram may be advisable.

Thunderclap Headache

- The term *thunderclap headache* describes a severe headache of instantaneous onset (within seconds)—abrupt and without warning like a "clap of thunder. "
- A patient with a sudden, severe headache must be evaluated on an emergency basis for evidence of a subarachnoid hemorrhage as outlined above.
- Other conditions can present with thunderclap headache including:
 1. Cerebral venous sinus thrombosis,
 2. Cervicocephalic arterial dissection,
 3. Pituitary apoplexy,
 4. Acute hypertensive crisis, and
 5. Spontaneous intracranial hypotension.

Thunderclap Headache (cont.)

- **These entities are associated** with significant neurological morbidity and may not be easily seen on the initial CT image, thus underscoring the need for MRI in this group if results of the initial workup are negative.
- **The question** as to whether an ***unruptured*** cerebral aneurysm can cause a thunderclap headache has been debated.
- **The weight of evidence,** based on several prospective studies of patients with normal neurological, CT, and CSF examinations, indicates that a symptomatic intracranial aneurysm will be rarely found in such patients.

Thunderclap Headache (cont.)

- **The issue of which patients need additional** investigations in this setting depends on the clinical suspicion of an underlying disorder.
- **Several follow-up studies of patients** with thunderclap headache and negative evaluations for subarachnoid hemorrhage and other underlying disorders have elucidated the often benign natural history of this peculiar headache disorder.
- **Slivka and Philbrook (1995) reported** four patients with thunderclap headache without subarachnoid hemorrhage, in three of whom angiography revealed diffuse segmental intracerebral arterial vasoconstriction.

Diagnostic criteria for thunderclap headache

I. Idiopathic thunderclap headache

1. Very severe pain intensity
2. Hyperacute onset of pain (<30 sec)
3. Headache lasts 1 hour to 10 days.
4. Headaches may recur over a 7-day period but do not recur regularly over subsequent weeks or month.

II. Thunderclap headache associated with a normal cerebral vasculature or reversible segmental vasoconstriction

1. May be clinically indistinguishable from thunderclap head ache associated with intracranial disorder*
2. May occur spontaneously or be precipitated by Valsalva's maneuver, sexual activity, exercise, or exertion

III. Thunderclap headache with neurological signs or symptoms

1. Headache and angiographic features as described above
2. Neurological signs or symptoms transient or result in minimal residual deficits

IV. Thunderclap headache associated with intracranial disorder

1. Associated conditions include subarachnoid hemorrhage (cerebral venous sinus thrombosis, pituitary apoplexy)*
2. May have associated neurological or systemic signs or symptoms, depending on underlying disorder

2. Subarachnoid Hemorrhage

Subarachnoid Hemorrhage

- Rupture of an intracranial aneurysm or AVM results in a subarachnoid hemorrhage, with or without extension into the parenchyma of the brain.
- The headache of a subarachnoid hemorrhage is characteristically explosive in onset and of overwhelming intensity.
- Subjects who survive may relate that they thought they had been hit on the head.
- The headache rapidly generalizes and may quickly be accompanied by neck and back pain.

Subarachnoid Hemorrhage (cont).

- **Loss of consciousness** may rapidly supervene, but many patients remain alert enough to complain of the excruciating headache.
- **The patient is often vomiting,** which aggravates the head pain.
- **Intraventricular blood, the distortion of the midline structures, and the heavy contamination** of the basal cisterns by blood can each contribute to the rapid development of **hydrocephalus,** which worsens the headache.

Subarachnoid Hemorrhage (cont).

- **The diagnosis is easily suspected** and can be confirmed by an unenhanced CT scan that reveals blood in the subarachnoid cisterns or within the parenchyma.
- **Early hydrocephalus** may also be seen.
- **When a CT scan unequivocally** shows blood in the subarachnoid spaces, it is not necessary or advisable to perform a lumbar puncture because the resultant reduction of CSF pressure may cause herniation of the brain or may remotely induce further bleeding from the aneurysm.
- **Demonstration of subarachnoid hemorrhage generally** indicates the need for cerebral angiography.

Subarachnoid Hemorrhage (cont).

- **Relief of the intense headache** of subarachnoid hemorrhage generally requires parenteral administration of analgesics.
- **The need to provide pain relief** must be balanced against the need to interfere as little as possible with the level of consciousness, respiration, and physical signs, such as pupil size and reaction.
- **Parenteral codeine** is often used, but meperidine is also useful.
- **Sedation with phenobarbital** may also be required if the patient is restless because of pain.
- **The headache that occurs** after a subarachnoid hemorrhage may be persistent, lasting up to 7-10 days.

Subarachnoid Hemorrhage (cont).

- **Rarely, a chronic daily headache** may persist for months to years.
- **The headache** of subarachnoid hemorrhage is aggravated by movement and is associated with photophobia and phonophobia.
- **Therefore, it is customary** to nurse patients in a dark, quiet room and to disturb them as little as possible.
- **Straining at stool,** vomiting, and coughing should be minimized.

Subarachnoid Hemorrhage (cont).

- **The hemorrhage and the headache** that can result from a ruptured AVM have qualities and behavior that are essentially identical to those from a ruptured berry aneurysm of the circle of Willis.

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THANK YOU