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A REVIEW ON THUNDERCLAP HEADACHE

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ABSTRACT

The term "thunderclap headache" (TCH) was first coined by Day and Raskin in 1986. Thunderclap headache (TCH) is head pain that begins suddenly and severe onset. Thunderclap headaches are rare. Headache will occur in less than 50 out of 100,000 people each year. Causes of thunderclap headaches include: Torn or ruptured blood vessels in the brain, Stroke (blocked or bleeding blood vessel), Brain aneurysm (bulging or bleeding blood vessel), Head injury that causes a brain bleed, Vasculitis etc. The main symptom in this type of headache is sudden and severe pain in the head. This pain reaches at its peak point within 60 seconds and lasts at least 5 minutes. Other symptoms may include: Numbness, Weakness, Speech problems etc. Thunderclap headaches are diagnosed with an imaging test called a CT-Angiogram scan. This result shows the doctor the blood vessels in and around the brain to see what is the reason for pain. Other tests include spinal tap, Magnetic resonance imaging (MRI) and lumbar puncture. A non-steroidal anti-inflammatory (NSAID) medicine can help reduce swelling. Other drugs can manage blood pressure. If the thunderclap headache is caused by spasms in the brain's blood vessels, IV or oral nimodipine may be given. This disease is also associated with angiographic evidence of diffuse multifocal cerebral vasospasm. Eventough this unusual angiographic abnormality is reversible and self limited, careful clinical observation is warranted, especially the focal neurological symptoms occur.

INTRODUCTION

The term "thunderclap headache" (TCH) was first coined by Day and Raskin in 1986 to report the type of headache which is the result of an underlying unruptured cerebral aneurysm. The term is now well established to describe the sudden onset headache.

Thunderclap headache (TCH) is head pain that begins suddenly and severe onset. The first sign of the conditions, viz; subarachnoid haemorrhage, cervical artery dissection, unruptured intracranial aneurysm, spontaneous intracranial hypotension, cerebral venous sinus thrombosis, acute hypertensive crisis, ischaemic stroke, retroclival haematoma, third ventricle colloid cyst, and intracranial infections, will be TCH. Primary thunderclap headache is clinically diagnosed when no underlying cause is discovered. About 90% of the population is affected by headache. The most common causes may be migraine and episodic tension-type headache. The term thunderclap headache is used to describe an instantaneous onset severe headache that is one minute at the most.

- Estimated incidence is about 43 per 100 000 people per year in the developed world.
- In the emergency headache centre, out of a total of 8000 patients each year, about 120 patients presents with thunderclap headache.

Incidence of thunderclap headache is more in patients with a history of recurrent headache, such as migraine. Itcan be considered as secondary to a variety of causes, the foremost of which of it is a subarachnoid haemorrhage. Other serious underlying causes of TCHare cervical artery dissection, cerebral venous thrombosis, and reversible cerebral vasoconstriction syndrome (RCVS).

Mode of onset and severity defines this type of headache clinically, as per 11 point scale (0 no pain; 1-3 mild pain; 4-6 moderate pain; 7-9 severe pain; 10 worst pain ever). If the score reaches 7 point or morewithin less than one minute, it can be considered as a thunderclap headache and may last from minutes to several days. Headache that occurs during awakening may be a type of TCH. The site and severity of pain are notspecific. Thunderclap headaches may be single or reappear over a few days.

EPIDERMIOLOGY OF THUNDERCLAP HEADACHE

Incidence of thunderclap headache has been estimated at 43 per 100,000 people every years. Approximately 75% are attributed to 'primary 'headache : headache disorders, non-specific headache, idiopathic thunderclap headache or uncertain headache disorders. In the light of the

3.6% to 6% prevalence of unruptured Intracranial aneurysms in the general population, these cases have sparked and fuelled the debate over whether the aneurysms in each case was an incidental finding or whether an unruptured saccular aneurysm can present with thunderclap headache and a normal CT, CSF and Neurological examination. Thunderclap headache appeared spontaneously in 67.7%, during sexual intercourse in 9.2%, and during cough in 7.7% of the cases.

ETIOLOGY OF THUNDERCLAP HEADACHE

Thunderclap headache could be caused by bleeding from artery into the space surrounding brain. This is known as subarachnoid hemorrhage, arteries are vessels that supply blood to brain. Thunderclap headache could also be cause by any of the following :

1. Small tears in the arteries of head or neck.
2. A burst artery or aneurysm, which is a swollen, or weak area in the artery.
3. Blocked veins in head.
4. Leaking spinal fluid.
5. Rapid changes in Blood pressure.
6. An infection in brain.
7. Head injury.
8. Hemorrhagic stroke.
9. Ischemic stroke.
10. Narrowed blood vessels surrounding the brain.
11. Inflamed blood vessels .
12. Extremely high Blood pressure in pregnancy.

Some activities in the following could trigger a thunderclap headache :

1. Hard physical labor.
2. Taking certain drugs, including illegal ones.
3. Hitting warm or hot water too fast, such as when first enter a shower or bath.

PATHOPHYSIOLOGY

The pathophysiology of idiopathic thunderclap headache with or without segmental vasospasm is unclear. The headache usually occur during physical activity, in patients with pheochromocytoma or acute hypertensive crises, and in patients who ingest sympathomimetic drugs or foods containing tyramine while using Monoamine oxoidase inhibitors, suggests the possibility that excessive sympathetic activity or an abnormal

vascular response to circulating catecholamines may be involved. In contrast to this hypothesis, a radiographic entity, reversible cerebral vasospasm has also been associated with pheochromocytoma, eclampsia, and sympathomimetic (amphetamine, cocaine) drug intoxication. In arterial stenosis it is a reversible process which include smooth muscle contraction of the blood vessel wall, which results in segmental luminal narrowing. It can be provoked by mechanical, and neurogenic stimuli. An abrupt onset of both the headache and vasospasm would seem to imply a neurogenic mechanism. Both perivascular and intramural portions of the intracranial arteries are richly invested with sympathetic nerves containing Neuropeptide Y and in human cerebral and meningeal blood vessels.

Neuropeptide Y is responsible for eliciting concentration dependent contraction. That vascular calibre may directly reflect sympathetic tone and sympathetic receptor sensitivity is evident from experimental and animal models of vasospasm in subarachnoid haemorrhage and commonly clinical finding of multifocal vasospasm in patients with pheochromocytoma and sympathomimetic. It is possible that idiopathic thunderclap headache represents a spontaneous and aberrant central sympathetic response. Then it is supported by the finding of sudden and severe headache in patients having paroxysmal hypertension that occur due to baroreceptor dysfunction and loss of inhibition of central sympathetic reflexes.

SIGNS AND SYMPTOMS

- The main symptoms of thunderclap headache is sudden and severe pain in the head
- The pain reaches its most intense point within 60 seconds and lasts at least 5 minutes

Other symptoms may include :

- Numbness
- Weakness
- Speech problems
- Nausea
- Vomiting
- Seizures
- Change in vision
- Confusion

DIAGNOSIS

 CT Scan of the head: This imaging test takes xrays that create slice like cross sectional images of your brain and head. A computer combines them with the full picture of your brain. The physician will inject an iodine based dye into your veins to make parts of your brain stand out.

 Spinal tap (Lumbar Puncture): This test involves taking bout a small amount of fluid that surrounds your brain and spinal cord.

 MRI: This imaging test is often used as a follow up to a CT scan. It uses a magnetic field and radiowaves to create a cross sectional images of the inside of your brain

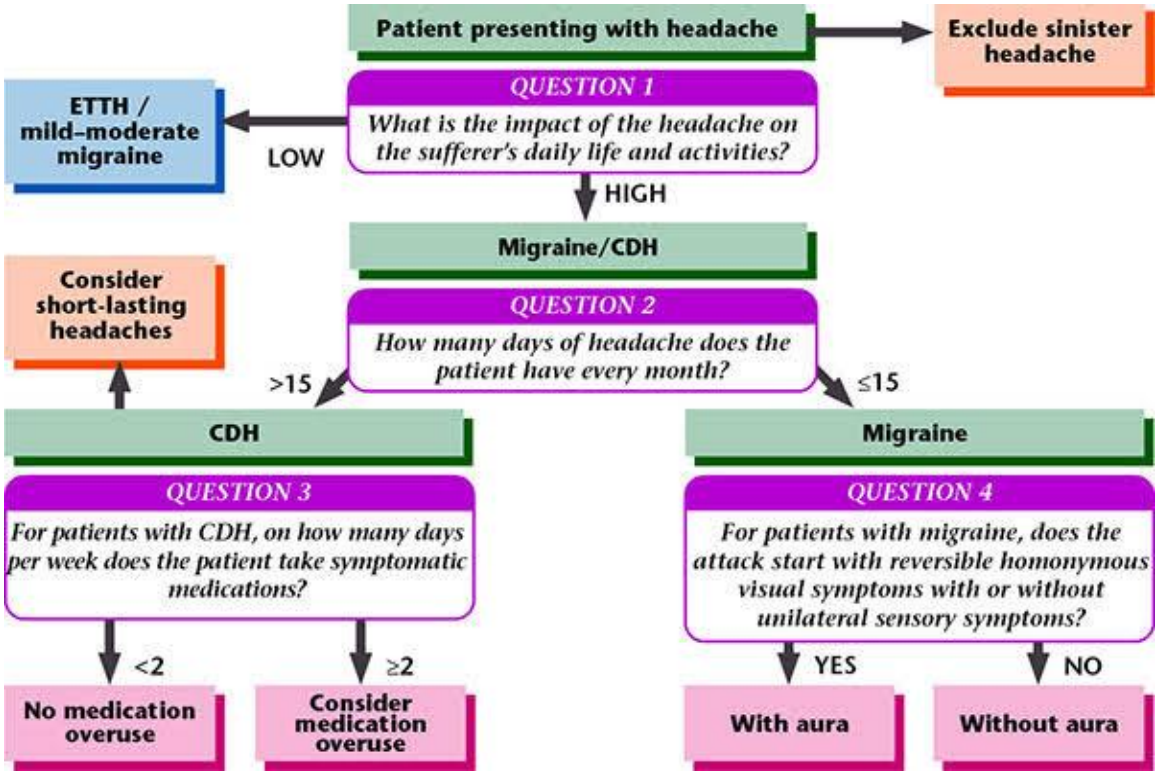
 Magnetic reasonance angiography: MRI machines can be used to map the blood flow.

TREATMENT

Treatment for thunderclap headaches depends on the cause. If a thunderclap headache has not occurred in associated with an urgent underlying condition, your doctor will treat it with medication. A non-steroidal anti-inflammatory (NSAID) medicine can help reduce swelling. Other drugs can manage blood pressure. If the thunderclap headache is mainly caused by spasms in the brain's blood vessels, IV or oral nimodipine (Nimotop®, Nymalize®) can be given. Surgeries are done in some thunderclap headache to constricted or ruptured blood vessels or remove a blockage. Your doctor will determine the best treatment option based on the cause of the headache. There are multiple treatment possibilities based on what's causing your thunderclap headaches. The treatment mainly will be focused on treating the cause of your headache. Treatments may include:

- surgery to repair a tear or blockage
- medications to control blood pressure
- pain medications are given to control recurrent thunderclap headaches, especially those that have a specific trigger

There are no other known preventive medication for primary TCH or RCVS. Bed rest is mainly recommended, as exercise, anxiety, and sexual activity can precipitate more TCHs. Laxatives and stool softeners are also given, as straining or bearing down can trigger TCH. The extreme head pain usually settles in a few minutes, but moderate to severe headache can persist for several hours. Common pain relievers like acetaminophen (Tylenol) and ibuprofen (Advil) is used. The potent drugs, such as morphine and other opioids, are mainly prescribed for prolonged or very severe head pain.



Certain medications are not used to treat TCH that include glucocorticoids, triptans, and other anti-migraine medications, which leads to narrowing of brain arteries that can worsen the situation. People with RCVS must avoid certain drugs for several weeks. These include serotonin-enhancing antidepressants (SSRIs and SNRIs), ecstasy, cannabis, and sympathomimetic and amphetamine derivatives such as pseudoephedrine (a common ingredient in many cough-and-cold remedies, exercise stimulants, and diet pills).Primary TCH can recur intermittently for several years. Recurrence of RCVS is extremely rare on comparing with other headaches. The affected patients can resume routine physical activities and gradually increase their intensity of exercise two to four weeks after the sudden-onset headaches subside. The extreme condition of head pain in primary TCH and RCVS can provoke significant anxiety. But the long-term outcome is nearly always benign.

PREVENTION

As they come on without warning, it is difficult to prevent thunderclap headaches. Managing our health conditions and avoiding triggers are the best ways to keep them from occurring. If you are a hypertensive patient, it is important to work with the physician to follow a regular treatment plan. Maintaining a healthy diet and active lifestyle helps to control blood pressure from rising to normal levels that could cause a condition involving a thunderclap headache.

In addition to that quitting smoking and controlling cholesterol levels in the body can help reduce the risk of blood vessel problems.

Try the following tips and get to feeling better fast.

1. Try a Cold Pack

If you are affected with migraine, place a cold pack on your forehead. Ice cubes wrapped in inside a towel, a bag of frozen peas, or even a cold shower may decrease the pain. Keep the compress that is towel with icecubes in your head for 15 minutes, afterwards take a break for 15 minutes.

2. Use a Heating Pad or Hot Compress

If you are having headache in associated with tension, place a heating pad on your neck or the back of your head. If you feel like a sinus headache, hold a warm cloth to the area that hurts. A warm shower can also decrease the pain.

3. Ease Pressure on Your Scalp or Head

If your hair style is too tight, it could cause a headache. Those are called "external compression headaches" which can also be brought on by wearing a hat, headband, or even swimming goggles that are too tight. In one study, women who loosened their pony hair style saw their headache disappear.

4. Dim the Lights

Bright light or flickering light, even from your computer screen, can lead to migraine headaches. If you are exposed to those, cover your windows with blackout curtains during the day. Wear sunglasses outdoors. You can also add anti-glare screens to the computer and use daylight-spectrum fluorescent bulbs in the light fixtures.

5. Try Not to Chew

Chewing gum can provoke the pain not just your jaw, but your head as well. The same is real for chewing your fingernails, lips, the inside or your cheeks, or handy objects like pens. Avoid crunchy and stickyfoods, and make sure you take small bites. If you crush your teeth at night, ask the dentist about a mouth guard. This may curb your early-morning headaches.

6. Get Some Caffeine

It is better to have some tea, coffee, or something with a little caffeine in it That ease your headache pain. It can be also cured by the-counter pain relievers like acetaminophen, work better.

CONCLUSION

Acute neurological emergencies such as cervicoephalic arterial dissection and cerebral venous sinus thrombosis may present with thunderclap headache as the earliest or only symptom in a significant minority of Population. Brain CT is often negative in some cases, and lumbar puncture is either negative as in arterial dissection, or may only demonstrate increased opening pressure in population with cerebral vein thrombosis. Because of the neurological morbidity associated with delayed ischaemic or haemorrhagic events in these conditions, prompt and early diagnosis is imperative. MR angiography is the imaging procedure of choice. This disorder associated with angiographic evidence of diffuse multifocal cerebral vasospasm. This unusual angiographic abnormality is reversible and self limited, careful clinical observation is necessary, especially if focal neurological symptoms occur.

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