Case report

Tension-type Headache and Migraine as Manifestations of Chronic Post-Traumatic Headache: Case Report

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Abstract

A subsequent headache that appears within seven days of a head injury is a post-traumatic headache (PTHA) (or after regaining consciousness after the head trauma). Suppose a post-traumatic headache lasts longer than three months after the injury. In that case, it is called chronic or chronic post-traumatic headache (CPTHA). A 17-year-old male comes to the neurology outpatient clinic with complaints of headache. The headache has been felt since three months ago, three days after the patient suffered a blow to his left head from falling from a chair. At that time the patient fainted about 15 minutes later; the patient regained consciousness and had no complaints. Pain is felt on the left side of the head, throbbing, mild-moderate intensity, and feels heavier when there is a loud sound or seeing a too-bright light. Like other primary headaches, post-traumatic headache is diagnosed clinically. Laboratory and routine diagnostic imaging studies are unnecessary and have minimal clinical utility. Brain MRI did not reveal any structural changes in patients with PTHA following injury. Chronic post-traumatic headaches often occur after brain injury, especially after minimally traumatic brain injury. The clinical picture is variable and may resemble tension-type headaches and/or migraines.

Keywords: migraine, tension-type headache, post-traumatic headache

Abstrak

Nyeri kepala yang muncul dalam tujuh hari setelah cedera kepala adalah nyeri kepala paska trauma. Jika nyeri kepala paska trauma berlangsung lebih dari tiga bulan setelah cedera, itu disebut sebagai nyeri kepala paska trauma kronis. Seorang

Kata kunci : migrain, sakit kepala tipe tegang, nyeri kepala paska trauma

INTRODUCTION

According to the type of pain and the severity of the brain damage, prevalence rates for chronic pain after brain injury range from 10% to 95%. Patients with brain injuries may experience chronic pain from a variety of causes. Headaches are the most typical form of chronic pain following a brain injury (Lew et al., 2006). A subsequent headache that appears within seven days of a head injury is referred to as a post-traumatic headache (PTHA) (or after regaining consciousness after the head trauma). Suppose a post-traumatic headache lasts longer than three months after the injury. In that case, it is called chronic post-traumatic headache (CPTHA)(Bogduk et al., 2011).

RESEARCH METHODE

This research is a case report regarding Tension-type Headache and Migraine as Manifestations of Chronic Post-Traumatic Headache. The implementation of the research has obtained informed consent from the patient and has been approved by the ethical committee.

CASE REPORT

A 17-year-old male comes to the neurology outpatient clinic with complaints of headache. The headache has been felt since three months ago (three days after the patient suffered a blow injury to his left head from falling from a chair). At that time the
patient fainted about 15 minutes later; the patient regained consciousness and had no complaints. Headache is felt on the left side of the head, throbbing, mild-moderate intensity, and feels heavier when there is a loud sound or seeing a too-bright light. Headache decreases when the patient rests and increases when the patient does his daily activity. Headache is felt almost every day, approximately 10 times daily, and lasts about 5-10 minutes. It is said that when resting, Numeratio Pain Rating Scale (NPRS) is 1/10, but when it reoccurs, the NPRS can reach 3-4/10. The patient also reported nausea and vomiting when the headache recurred. The patient said he had seen a flash of white light once before the headache recurred. Headaches are also felt in the neck and back of the head, like tension and pulling. The headache felt persistent, did not improve, and did not worsen. The patient has taken paracetamol, but there has been no improvement. The patient thinks that when the headache recurs, it interferes with his daily activities. The patient denied complaints of double or blurred vision, weakness in half of the body, tingling sensation, slurred speech, pursed lips, impaired walking, convulsions, projectile vomiting, and weight loss. The patient denied complaints of fainting, forgetfulness, and anxiety or depression.

The patient's vital signs were within normal limits. No abnormalities were found on physical examination. Global or focal neurological deficits were not found on neurological examination. The patient was then planned for an EEG examination; the results showed no abnormalities. Laboratory examinations and head imaging were not performed because there were no indications. The patient was then given a combination of paracetamol, ibuprofen, and amitriptyline. On follow-up day 3, the patient had fewer headaches with less frequency and less pain intensity (NPRS 2-3/10 when headaches recurred).

**DISCUSSION**

People with the tension kind of CPTHA experience mild to moderate bilateral pain with a pressing, tugging, and dull quality and is made worse by exertion, stress, and emotional strain. People with the migraine-type of CPTHA experience unilateral pain that is severely pounding, throbbing, and stabbing and is made worse by physical activity. Patients may also express sensitivity to loud noises or bright lights.
(photophobia and phonophobia). Less than one-third of CPTHA patients experience "mixed headaches," which are symptoms of several overlapping forms of headaches (Defrin et al., 2010; Lucas et al., 2014). In this case report, the patient complains of mixed headaches. The patient complains of tension-type headaches and headaches resembling migraines.

Most people get daily or weekly headaches, whereas a smaller percentage experience them only once a month or less frequently. Headaches were said to worsen during the episodes steadily, reach very high intensities (VAS or NPRS = 8–10, where a value of 0 is no headache, 1 is a mild headache, and 10 is a very severe headache), and be painful enough to prevent activities. People with CPTHA may also experience neck pain, described as a feeling of muscular spasm and tightness in the neck, particularly in the posterior area (Defrin et al., 2010). There is still a lack of knowledge on the pathogenesis of post-traumatic headaches. However, the basic origins of PTHA are explained by several ideas. These hypotheses include altered neurometabolic processes, poor descending regulation, and trigeminal sensory system activation. There are probably several overlapping pathways involved in PTHA (Ashina et al., 2019).

The underlying explanation for the origin of PTHA likewise centers on abnormalities in the neurometabolic system. According to research, brain injury alters the brain’s metabolic process. Damage to cells caused by physical stress results in the uncontrolled release of ion-exchange neurotransmitters. This explains why post-traumatic headaches often resemble migraines (Ayata and Lauritzen, 2015).

Due to neuroinflammation, the central nervous system (CNS) can become more excitable, causing CSD and activating the trigeminal sensory system. Due to overlapping communication pathways, nociceptive signals from upper cervical afferents can activate the trigeminal system. The convergence of cervical afferent and trigeminal nerve pathways supports the discovery that therapies for cervical neck pain generators can contribute to PTHA relief (Lucas et al., 2014).

Similar to other primary headaches, post-traumatic headache is clinically diagnosed. Laboratory and routine imaging diagnostics are unnecessary and have limited clinical utility. Brain MRI did not reveal any structural changes in patients with
PTHA after injury. Patients diagnosed with PTHA following a brain injury do not require additional imaging if they have received the appropriate screening for brain cancer. To exclude headache causes other than PTHA, patients with a history of brain injury and recent headache symptoms require additional imaging. A head CT without contrast may be performed to rule out acute cerebral hemorrhage, particularly in older people (Schwedt, 2019). Imaging tests are unnecessary because the patient is young and has no focal or generalized neurologic deficits.

Post-traumatic headaches are managed and treated using a multimodal approach, including oral medications, musculoskeletal manipulation and treatment, interventional techniques, and behavioral therapy. Numerous studies have examined oral and intravenous medications for acute and preventative care. Acute therapeutic options include nonsteroidal anti-inflammatory drugs (NSAIDs), triptans, and intravenous antiemetics. In preventive regimens, tricyclic antidepressants (TCAs), anticonvulsants, and gabapentin are all included. A majority of TCA-using patients benefited from amitriptyline. Nonetheless, Cushman et al. discovered that patients taking either gabapentin or amitriptyline improved compared to those not receiving treatment.(Larsen et al., 2019).

**CONCLUSION**

Chronic post-traumatic headaches are common, especially after mild brain injury. The variable clinical presentation may resemble tension-type headaches and migraines. The mechanism of CPTHA is poorly understood; however, there is evidence that it can develop due to intracranial/peri-cranial tissue injury that induces chronic local sensitization. Routine administration of ibuprofen and acetaminophen or ibuprofen alone effectively reduces the symptoms of post-traumatic headache during the acute concussion period.

**REFERENCES**


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