

Case Report

Neurologic Etiology of Episodic Abdominal Pain: Epilepsy vs. Migraine

Nada M. Dammas^{1*}, Charles A. Popeney², Raed F. Hashem¹

¹College of Medicine, King Saud University, Riyadh

²Fort Bend Neurology, Sugar Land, Texas

*Corresponding author email: ndammas@yahoo.com

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Abstract

The temporal lobe has a vital role in epilepsy, and is the most common lobe involved in focal onset seizures. Patients with temporal lobe epilepsy (TLE) usually have auras, an epigastric-rising sensation is the most common aura reported. Semiology of TLE is abdominal pain. Thus, TLE has to be suspected in patients with unexplained episodic paroxysmal abdominal pain associated with symptoms such as loss or changing of consciousness, and migraine-like symptoms. This case reports a 14-year-old boy who has been diagnosed with abdominal migraine for 7 years. He initially presented with episodic severe abdominal pain and right-sided headache. The abdominal pain is periumbilical, and not associated with vomiting or diarrhea. There are no other gastrointestinal complaints, and all the abdominal investigations were negative. Drugs were of no significance on the long term. Recently, the patient was found to have a benign brain tumor, and correlation with an electroencephalography (EEG) that gave abnormal results due to the presence of bilateral spike-and-wave discharges confirmed the diagnosis of temporal lobe epilepsy manifested by abdominal pain. Our patient did not fulfill the International Classification of Headache Disorders Third Edition (Beta Version) (ICHD-IIIb) diagnostic criteria for abdominal migraine, although his case was reviewed by many physicians over the years. In conclusion, this case shows how important it is to follow the diagnostic criteria of diseases and disorders. It also focuses on how seizures can have a wide spectrum of manifestations. Thus, neurological causes have to always be on the differential diagnoses.

Key words

Temporal lobe epilepsy, Abdominal pain, Migraine; Abdominal migraine.

Introduction

The temporal lobe has a vital role in epilepsy, and is the most common lobe involved in focal onset seizures [1]. Temporal lobe epilepsy (TLE) is often associated with a certain lesion of the hippocampus and amygdala called mesial temporal lobe sclerosis (MTS) [2], and the identification of an epileptogenic lesion such as MTS improves the possibility of seizure freedom after surgery [3]. The International League Against Epilepsy considers temporal lobe epilepsy as part of simple or complex partial seizure [4]. Patients with TLE usually have auras, especially older children who particularly have mesial temporal lobe epilepsy [5]. An epigastric-rising sensation is the most common aura reported [6]. Semiology of TLE is abdominal pain. These seizures are accompanied by abdominal pain and emesis [6]. The abdominal discomfort is mostly periumbilical, colicky, and severe. In addition to these symptoms, it can be accompanied by headache, dizziness, syncope, and temporary loss of vision [6, 7]. Reaching a diagnosis can be difficult for clinicians to make (and this is why structural etiology for the partial seizures should be ruled out), eventually requiring prolonged video electroencephalography (EEG) monitoring to establish [7]. Thus, TLE has to be suspected in patients with unexplained episodic paroxysmal abdominal pain associated with symptoms such as loss or changing of consciousness, and migraine-like symptoms. And the diagnosis is confirmed with epileptiform EEG abnormalities, and or a positive response to antiepileptic drugs [8]. In the differential diagnoses is abdominal migraine, which is one of the migraine subtypes in the International Classification of Headache Disorders [9]. Intractable seizures often permit surgical resection [10, 11], and various studies have indicated that radical removal of an epileptogenic tumor is the best predictor of seizure freedom [12].

In this article, we present a case of a 14-year-old boy who has been diagnosed with abdominal migraine for 7 years. The diagnosis turned out to

be temporal lobe epilepsy manifested by abdominal pain and headache. Further investigations and diagnostic studies revealed an epileptogenic cyst in the right mesio-temporal lobe.

Case report

This was a case of a 14-year-old male who has been diagnosed with abdominal migraine and migraine headache for 7 years. He initially presented with episodic severe abdominal pain and right-sided headache. The abdominal pain was periumbilical, constant with varying intensity (3/10 - 7/10), non-radiating, and not associated with vomiting or diarrhea. There were no other gastrointestinal (GI) complaints. Some episodes of abdominal pain last for 15 days. However, he once stayed in a continuous abdominal pain cycle for up to 59 days. The abdominal pain prevented him from playing normally, though he was social when he's not in pain. The patient did acknowledge feeling frustrated, angry, and discouraged. He had a positive family history of migraines in his mother and maternal grandmother, and another positive history of epilepsy and brain cancer in his maternal grandfather. His abdominal and neurological examinations were normal, and the review of systems is unremarkable.

All his GI investigations and workup including an abdominal ultrasound, Esophagogastroduodenoscopy (EGD) with a biopsy, and a HIDA scan were negative. He was given various drugs for his abdominal pain and headache, most of them did not improve his symptoms. Initially, he was prescribed aluminum hydroxide and magnesium hydroxide, diphenhydramine, metoclopramide, and ketorolac for the headache and abdominal pain, they gave minor improvement. In addition, he was given some specific medications for the headache including cyproheptadine, zolmitriptan, amitriptyline, ibuprofen, carbamazepine, magnesium oxide, topiramate, with no significant reduction in the pain or frequency. Although the intravenous valproate did not aid in reducing the

abdominal pain, it did improve the headache. Occasionally, the migraine cocktail (Ketorolac and metoclopramide) helped improving the headache. The pain service was involved and they recommended consideration of acupuncture for treatment of chronic pain condition. However, the patient did not tolerate the procedure. The psychology team was also consulted and they taught him some of the biofeedback techniques.

3 years ago, the patient was found to have a benign brain tumor. The magnetic resonance imaging (MRI) showed a non-enhancing intra-axial mass centered in the right amygdala with minimal extension into the right hippocampal head, and the main consideration was dysembryonic neuroepithelial tumor (DNET). He was having serial follow-up MRI to monitor the mass, and there were no significant changes. This tumor was not taken into account for his chronic condition until he had an electroencephalogram (EEG) earlier this year which gave abnormal results due to the presence of bilateral spike-and-wave discharges, with maximum amplitude noted in the right central parietal region. The diagnosis of temporal lobe epilepsy was eventually given to this patient, and the neurology and neurosurgery team agreed on

surgically removing the tumor in order to manage his chronic condition of seizure disorder.

Discussion

Episodic abdominal pain is a relatively common problem among children. Despite all the process that physicians go through in order to find a definitive diagnosis, the cause seems elusive. This may lead us to think these children could possibly be suffering from a psychogenic pain. However, neurological etiologies remain in the list of the differential diagnoses of chronic recurrent abdominal pain in children, such as abdominal migraine and temporal lobe epilepsy. Although such conditions are easily treatable, with this presentation they can be difficult to recognize. Simple partial seizures in temporal lobe epilepsy may be differentiated from abdominal migraine by the occurrence of other features of partial seizures, the family history, and an EEG showing interictal epileptiform discharges. In 2013, the International Headache Society included diagnostic criteria for abdominal migraine in the International Classification of Headache Disorders Third Edition (Beta version) (ICHD-IIIb, **Figure - 1**) [9]. In addition to these criteria, the presence of gastrointestinal or urinary tract disease must be excluded on the basis of history, physical examination, and investigations.

Figure - 1: International classification of headache disorders third edition (beta version) diagnostic criteria for abdominal migraine.

- A. At least five attacks of abdominal pain, fulfilling criteria B–D
- B. Pain has at least two of the following three characteristics:
 - 1. midline location, periumbilical or poorly localized
 - 2. dull or “just sore” quality
 - 3. moderate or severe intensity
- C. At least two of the following four associated symptoms or signs:
 - 1. anorexia
 - 2. nausea
 - 3. vomiting
 - 4. pallor
- D. Attacks last 2-72 hours when untreated or unsuccessfully treated
- E. Complete freedom from symptoms between attacks
- F. Not attributed to another disorder¹.

Our 14-year old patient was initially diagnosed with abdominal migraine and migraine headache. He did not fulfill diagnostic criteria C and F. The MRI that the patient had 3 years ago showed a non-enhancing intra-axial mass centered in the right amygdala with minimal extension into the right hippocampal head, and the main consideration was DNET. These DNETs are often located in the temporal lobe, and are low-grade glioneuronal tumors that are usually diagnosed in children and young adults following new-onset partial seizures [10, 11]. They are characterized histologically by oligodendroglial-like cells, along with astrocytes and neuronal cells, with minimal cellular atypia [13]. On the other hand, MTS is pathologically characterized by loss of pyramidal neurons and gliosis in the hippocampus, it is a common cause of temporal lobe seizures that are usually intractable [13]. This finding directed the physicians to look further into neurological correlation between the cyst and the abdominal pain. The patient eventually had an EEG that gave abnormal results due to the presence of bilateral spike and wave discharges, and got diagnosed with temporal lobe epilepsy manifested by abdominal pain, and caused by an epileptogenic tumor in the right amygdala.

Conclusion

The present case-report focuses on the importance of following diagnostic criteria and reviewing the diagnosis when the patient is referred from a physician to another. It is very critical to review all the presenting cases comprehensively, since minor information may be of major importance. It also focuses on how seizures can have a wide spectrum of manifestations that are not related to the brain, but since the brain is connected to the whole body, neurological causes have to always be on the differential diagnoses.

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