CASE REPORT

A Headache Misunderstood for a Grief Reaction: An Unusual Cerebral Venous Thrombosis Presentation

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Abstract

This is a report of a 24-year-old woman who presented to the Emergency Department (ED) at Imam Hossein Hospital in Tehran, Iran with a one-week history of headache and agitation following her father’s death. Before presenting to our ED, a diagnosis of conversion reaction was suggested by three physicians in different outpatient clinics. Cerebral venous thrombosis (CVT) was confirmed in this case on the basis of brain magnetic resonance imaging (MRI) and magnetic resonance venography (MRV). In this report, current knowledge regarding cerebral venous thrombosis and its related clinical features are discussed.

Key words: headache, cerebral venous thrombosis, grief, agitation

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Introduction

Headache is a common symptom in patients referred to Emergency Departments (EDs). Some critical causes of headache should be diagnosed early for proper management. Cerebral venous thrombosis (CVT) is a rare but important cause of headache that is usually missed by emergency and family physicians in outpatient settings. An accurate and prompt diagnosis of CVT is crucial because timely and appropriate therapy can reverse the disease process and significantly reduce the risk of acute complications and long-term sequelae. Since the possible causal factors and clinical manifestations of thrombosis are many and varied, imaging plays a primary role in diagnosis. This report describes a young patient referred to our ED with a one-week history of headache that occurred after her father’s death. Following a battery of evaluations, a diagnosis of CVT was confirmed. In this report, the differential diagnosis, management, pathophysiology and prognosis of CVT are also discussed.

Case Report

A 24-year-old woman presented to our ED with a chief complaint of severe generalized headache lasting for one week after her father’s death. Before presenting to our hospital, she had visited three outpatient clinics; however, her symptoms were not alleviated. The medical records from these clinics showed a diagnosis of conversion reaction and hence analgesics were the only drugs that the patient took during this time. On the day of admission, the patient was agitated and complained of a severe headache accompanied by nausea and vomiting. Her family stated that her behavioral changes first appeared after the loss of her father. The patient reported no complaints of diplopia, aura, paresthesia or seizure-like attacks. Her past medical history (PMH) was unremarkable for migraines or other medical or surgical conditions.

Her family history (FH) did not include any strokes, rheumatic diseases or blood disorders. She had been on the mini-Pill (progestin-only Pill) as a contraception method for two years.

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On physical examination (PE), the patient’s vital signs were as follows: BP=100/70 mmHg, PR=100 beats/min, RR=20 breaths/min and oral temperature=37.3°C. The physical examination also revealed a normal level of consciousness and normal orientation, attention, language, affect, judgment and insight; however, the patient was agitated, irritable and uncooperative.

The results of a cranial nerve exam and a fundoscopic examination of the eyes were both normal. The patient’s muscle power was normal and tremor was absent. The results of gait, sensory, cerebellar and reflex testing were unremarkable.

Routine hematology measurements, the erythrocyte sedimentation rate and the level of thyroid stimulating hormone were normal, and tests for a hypercoagulable state, including homocysteine, protein C, protein S, lupus anti-coagulant, anti-thrombin III, factor V Leiden and common prothrombin mutations, were all negative for significant abnormalities. Tests for anti-nuclear antibodies and rheumatoid factor were negative. During the ED evaluation, the patient’s anxiety attacks and agitation were controlled with haloperidol (5 mg).

Computed tomography (CT) scanning of the head showed no abnormalities.

The patient was admitted to the hospital where she underwent brain magnetic resonance imaging (MRI) that revealed hyperintense T2 signals on the lateral and sagittal sinuses (Fig. 1). Additionally, brain magnetic resonance venography (MRV) showed a loss of venous flow in the supersagittal and sigmoid sinuses that was more predominant on the left side (Fig. 2). There was no evidence of ischemia or hemorrhage on brain MRI or MRV. During the patient’s hospital stay, body weight-adjusted subcutaneous low molecular weight heparin (LMWH) was administered to achieve an at least doubled activated partial thromboplastin time. After discharge, the patient was treated with oral anticoagulants (warfarin; 2.5 mg daily) for three months aiming at an international normalized ratio (INR) target of 2.0-3.0. After the first month of follow-up, the patient preferred to continue her treatment with her primary family physician. For this reason, we were unable to arrange a post-treatment imaging study of the patient.

Discussion

CVT is a chronic pathologic state that involves the cortical veins, deep cerebral veins and dural sinuses. Because CVT is a rare disease, determining its correct prevalence and incidence is difficult (1, 2).

Following the formation of a thrombosis clot in the dural sinuses, the venous pressure increases, thus leading to a decreased cerebral blood flow in related anatomic areas that ultimately results in territorial cerebral ischemia. Following this, the intracranial pressure (ICP) will increase to a low to high-grade level, which may be followed by hemorrhage and infarction in the pertinent brain area. Without early diagnosis and treatment, CVT can be lethal. The outcome prognosis depends on the following variables: level of consciousness (poor in early presentation with coma), age (poor in the extreme of ages), grade of ICP (poor in increased ICP) and host underlying disease (poor in conditions such as malignancy or sepsis) (3).

More than 100 different causes of venous thrombosis have been described in the literature (1). The causal factors may be classified as local (related to intrinsic or mechanical conditions of the cerebral veins and dural sinuses) or systemic (related to clinical conditions that promote thrombosis). Local processes that alter the venous flow (e.g., sinus trauma, regional infection such as mastoiditis and neoplastic invasion or compression) may potentiate the development of thrombosis. Systemic causes include protein-S and protein-C deficiencies, a peripartum state, oral contraceptive use and hypercoagulable states secondary to malignancy. In as many as 25% of cases, no cause is identified (4). In our case, the use of oral contraceptives might have acted as a transient risk factor for clot formation and the development of CVT. It has been reported that the most frequent risk factor in young women for CVT formation is the use of oral contra-
ceptives. Two case-controlled studies have shown an increased risk of sinus thrombosis in women who use oral contraceptives (5, 6).

Clinical manifestations

The clinical manifestations of CVT vary depending on the extent, location and acuity of the venous thrombotic process as well as the adequacy of the venous collateral circulation (7). Generalized neurologic symptoms (e.g., headache, experienced by 75-95% of patients) and focal neurologic deficits, including seizures, may result. Focal neurologic symptoms are more often seen in patients with parenchymal changes observed on imaging than in those without such changes. Because thrombosis and endogenous thrombolysis and recanalization may occur concurrently, the clinical manifestations may fluctuate in as many as 70% of patients, adding to the clinical uncertainty (2). A high index of suspicion is necessary for making an early diagnosis of CVT, as the diversity of signs and symptoms in the clinical presentation of CVT is high.

In the present case, the concurrent presence of headache and behavioral changes just after the death of the patient’s father mislead the primary care physicians. In fact, headache, the main complaint, was overlooked due to the presence of agitation. Increased ICP may result in a variety of symptoms, including psychomotor agitation and profound headache. For this reason, managing increased ICP, controlling psychomotor agitation and providing analgesic treatment are mandatory for the successful treatment of these patients.

For patients with unexplained severe and/or prolonged headache with or without focal neurologic deficits, a diagnosis of CVT should be considered in the differential diagnosis. More than 60% of patients with CVT can be cured without developing sequelae, especially those presenting with symptoms of increasing ICP only (8).

CVT is a relatively rare disease, and there is a lack of controlled studies evaluating therapies for this condition. Only two small controlled trials have compared the efficacy and safety of anticoagulants with a placebo for the treatment of CVT. Both trials chose an adverse outcome, instead of a good outcome, as the main criterion to evaluate the efficacy of anticoagulants. Moreover, the three month follow-up period used to evaluate the functional outcomes in these two reports may have been too short, since major improvements can be seen in patients with CVT far beyond three months (9-12). Current therapeutic consensus rests on the use of standard heparin to prevent further clot formation and promote recanalization. However, surgical intervention should be considered in patients with underlying malignancies, acute visual loss due to CVT or uncontrolled increasing ICP. These factors were not applicable to our patient; hence, anticoagulant therapy was sufficient. As all of the indicators of a thrombophilic state, either genetic or acquired, seemed to be absent in our patient (according to lab data), the use of OCP as a transient risk factor for clot formation was the only identifiable cause of CVT in our patient. Hence, a three-month trial of oral anticoagulant therapy administered according to the European Federation of Neurological Societies (EFNS) guidelines published in 2010 (9) was sufficient. These newly revised guidelines propose using oral anticoagulant therapy with a target international normalized ratio of 2.0-3.0 for three months if CVT is secondary to a transient (reversible) risk factor.

In the primary evaluation of CVT, brain CT may be useful; however, the sensitivity and specificity of CT for CVT is low. However, abnormal findings such as brain edema, hemorrhage or the presence of hyperdense lesions or small brain ventricles might be seen on brain CT (13).

The detection of thrombosis in related dural sinuses on brain MRI and the detection of local venous perfusion on brain MRV are specific imaging signs that indicate a diagnosis of CVT (11). Unfortunately, we had no access to the patient after one month to arrange a post-treatment MRI. However, it is expected that follow-up MRI studies in such patients will show recanalization within the first four months after CVT (9).

We are now seeking to establish a clinical policy in the management of patients with severe headache who present to the ED to answer this critical question: What are the indications for early MRI in the management of patients with severe headache in the ED? As in this case, an unusual presentation of a rare disease might therefore require the proper use of neuroimaging modalities.

The authors state that they have no Conflict of Interest (COI).

References

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