



A Case of Basilar Artery Dissection Occurring during Sexual Intercourse and Its Radiological Features

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Abstract

Isolated Basilar Artery Dissection (BAD) is a rare cause of ischemic stroke. Sexual intercourse may result in dissection through physiological stress on the body causing an abrupt elevation in blood pressure and shearing force against the vessel wall. Since the posterior vascular system feeds vital areas such as the Pons, respiratory center, and motor pathways, early recognition of vascular pathologies involving these areas is vital. Here in we report the imaging findings of a young male patient admitted to the emergency department with sudden onset of neurological disorders due to BAD developed during orgasm.

Introduction

Isolated Basilar Artery Dissection (BAD) is a rare but important cause of ischemic stroke. Blunt trauma, antecedent neck manipulation, spontaneous fibromuscular dysplasia, or connective tissue diseases may take place in the etiology [1]. Besides all these causes, sexual intercourse may result in dissection through physiological stress on the body causing an abrupt elevation in blood pressure and shearing force against the vessel wall [2-4]. Clinical manifestations include transient ischemic attack or ischemic, subarachnoid hemorrhage, and brainstem compression by large pseudoaneurysm. Since neurological events usually occur within 1 week of arterial dissection and the risk of recurrent stroke is highest in the first month, early diagnosis and treatment are important to avoid mortality and morbidity [5].

The diagnosis is difficult due to widely variable clinical presentations and nonspecific radiological signs on imaging studies. Although there is no consensus diagnostic criteria for isolated BAD, Computed Tomography (CT) and CT Angiography (CTA) are generally the first choice examinations. Magnetic Resonance Imaging (MRI) and MRI Angiography (MRA), which has much greater sensitivity in showing small foci of ischemia and the ability to view the vessel lumen are also more sensitive in imaging intramural bleeding. Conventional angiography is traditionally considered the gold standard [5-7].

According to the literature; BAD is responsible for 1.0% of all subarachnoid hemorrhage events and at least 11% and 5% of posterior circulation and brain-supplying artery dissections. This disease should be considered in the differential diagnosis because of its heterogeneous clinical presentation, variable prognosis, and under recognition. Especially in young individuals, peritonal subarachnoid hemorrhage should be considered in posterior circulation strokes [8]. Herein we report the imaging findings of a young male patient admitted to the emergency department with sudden onset of neurological disorders due to basilar artery dissection developed during orgasm.

Case Presentation

A young smoker man without significant past medical history admitted to the emergency department complaining of loss of consciousness and unresponsiveness to external stimulus. The symptoms began 1 h before emergency department presentation when he experienced sexual orgasm. After the severe headache that started during sexual intercourse, loss of consciousness and generalized contraction began during erection. His laboratory examinations revealed no abnormality. An urgent brain CT and MR imaging study was obtained, revealing no abnormality. The patient was intubated because of unconscious and to ensure airway safety. Left hemiparesis was observed in the examination performed after cessation of sedation.

A control diffusion MRI study showed bilateral point in and middle cerebellar peduncle infarcts (Figure 1), followed by hemorrhagic transformation demonstrated on CT examination (Figure 2). MRA study showed wall irregularities and luminal narrowing at the basilar artery evaluated

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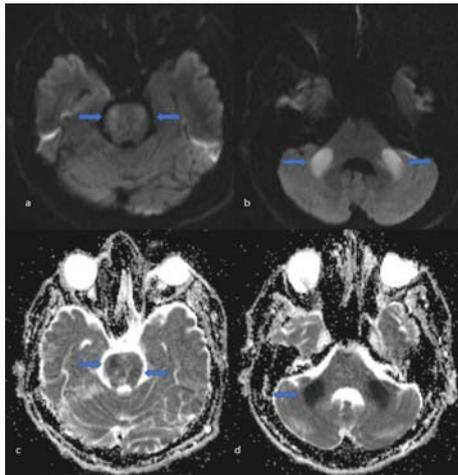


Figure 1: Diffusion MRI showed bilateral Pontine (a,c) and middle cerebellar peduncle infarcts (b,d) as showed by arrows.

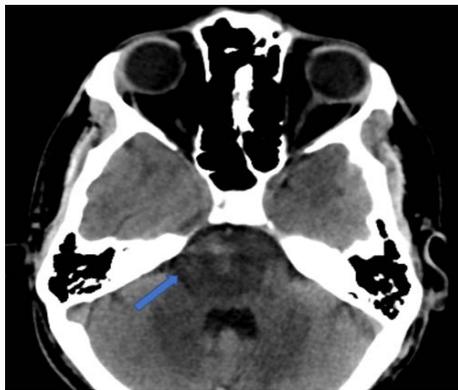


Figure 2: Pontine hemorrhagic transformation was demonstrated on CT.

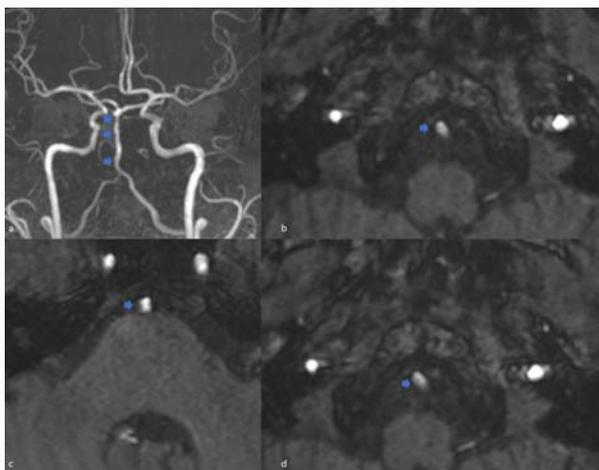


Figure 3: MRA study showed wall irregularities and luminal narrowing at the basilar artery evaluated in favor of dissection (a: 3D-TOF; b-d: MRA examinations).

in favor of dissection (Figure 3). A conventional cerebral angiogram confirmed the abnormality appeared on the MRA (Figure 4). The clot aggregates were removed and the procedure was completed without complication by providing reperfusion. The patient received anticoagulant therapy. He was extubated after a period of time, but tracheostomy was performed due to severe central neurological



Figure 4: Conventional cerebral angiogram confirmed the abnormality and irregularities in basillary artery.

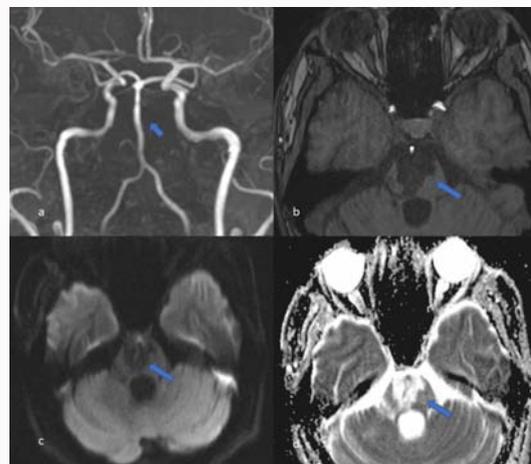


Figure 5: MRA showed complete recanalization of BA In 3D-TOF and MRA images 4 months later after onset of BAD (a,b), Diffusion weighted images (b,c); Large infarct sequela in the pons was observed 4 months later (c,d).

deficit. A Percutaneous Endoscopic Gastrostomy (PEG) catheter was also placed to provide enteral feeding. Follow-up MRA 4 months later showed complete recanalization of BA with large infarct sequela in the Pons (Figure 5).

Discussion

There are many different causes of arterial dissection, and orgasmic dissection is a rare condition among them [1,2,4,5]. During orgasm, blood pressure may increase by 40 mmHg to 100 mmHg systolic and 20 mmHg to 50 mmHg diastolic, and this physiologic change has been suggested to play a role in the genesis of sexual headache [9]. Although orgasmic headache does not always indicate a serious underlying pathology, it is important to note the characteristic signs and symptoms of the more serious and concerning vascular causes of coital headaches. Wherefore the most concerning cause of coital cephalgia is vascular pathology, work-up should be directed towards artery dissections, aneurysms and intracranial hemorrhage [10]. The importance of a correct diagnosis is very important due to the important differences in the prognosis and treatment of underlying etiologies. Therefore, a life-threatening cause must first be excluded in the initial diagnosis of coital cephalgia. Unlike most cases reported in the literature, our patient developed severe headache and loss of consciousness synchronously.

BAD is a rare and increasingly identified causing of stroke in the general population; however, it represents one of the most common causes of stroke in patients less than 45 years of age. Clinical manifestation differs according to the territory of infarction or subarachnoid hemorrhage and the degree of compression by dissected vessel walls, whereas headache and neck pain are the main symptoms and have been reported in 185% to 92 % of the patients [11]. Ruecker showed most presentation of BAD is subarachnoid hemorrhage rather than posterior circulation brain ischemic change, and subarachnoid hemorrhage typically manifests at an older age than brain ischemia. Ischemia commonly takes a complicated and progressive course, and the subarachnoid hemorrhage is clinically indistinguishable from aneurysm [6]. Although the long-term outcome is favorable in the majority of patients, depending on the cumulative burden and location of brainstem infarcts, recurrent ischemic events are common and often associated with progressive clinical deficits. It is apparent that the risk of recurrent ischemia by far surpasses the risk of bleeding [6]. In our case, infarct developed similar to the one reported in the literature. However, unlike the literature, instead of subarachnoid hemorrhage, pontine parenchymal hemorrhage without aneurysm developed on the basis of infarct.

Isolated BAD could be hard to be detected, using different imaging modalities, more advanced techniques, and serial follow-up imaging could provide more radiological evidences for diagnosis. Chen et al. [5] reported that they could diagnose only one of four cases using the first-line imaging study. The other three cases needed to receive more than one imaging modality or serial imaging studies to confirm the diagnosis. Although invasive angiography is the gold standard in the diagnosis of vertebrobasilar artery dissection, cross-sectional imaging methods such as MRA combined with conventional MRI and BTA have now become the widely preferred imaging modality due to its non-invasiveness and comparable sensitivity and specificity. However, pathognomonic radiological findings such as intramural hematoma, intimal flap, or double lumen are relatively rare [5]. In addition to demonstrating posterior fossa ischemia or subarachnoid hemorrhage, CT may describe an obstructed vertebral artery or wall thrombus [12]. The value of MRI is its high resolution, especially in the posterior fossa, and the ability to directly visualize intramural hematomas [13]. The diagnosis of dissection cannot be made or is delayed because the clinical findings are non-specific and the main symptom is usually headache. However, since our case had cerebrovascular findings at the time of admission, an investigation was performed in this direction and an early diagnosis could be made.

Conclusion

Orgasmic headache could be precipitated by a potentially fatal etiology although it is usually benign. Patients who present with

severe orgasmic headache should clearly undergo an appropriate evaluation to rule out ischemic stroke and/or hemorrhage. Serial image tracking and the implementation of different and advanced imaging studies are useful to confirm the diagnosis. CT and MRI can be used for evaluation of dissections. Each modality has advantages over each other.

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