Vertebral Artery Dissection and Cerebellar Infarcts Presenting as a Typical Migraine

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Abstract
We present a case of vertebral artery dissection presenting as an atypical migraine with key features including localised pain and transient ischaemic symptoms.

Keywords: Cervicocerebral arterial dissection; Vertebral artery

Introduction
Headache and neck pain are common presenting symptoms of Cervicocerebral Artery Dissection (CAD). It is often accompanied by ischaemic symptoms and focal neurological signs. Arterial dissections account for approximately 2% of ischaemic strokes [1]. It is an important cause of stroke in younger patients. In an evaluation of 1008 consecutive ischaemic stroke victims aged 15 to 49 Putaala et al. [2] found CAD to be the underlying etiology in 15% of patients, second only to cardioembolic causes.

Case Presentation
A 31 year old migraineur presented to the emergency department with a worsening left sided occipital headache, left sided posterior neck pain, vertigo and disequilibrium with falling to the left side. These symptoms evolved into paresthesia in the left face, arm, and leg as well as dysarthria which resolved spontaneously before his arrival to the emergency department. The symptoms were preceded by chronic occipital headaches and neck pain over a one month period leading up to his presentation to the emergency department. There was no history of overt neck trauma or chiropractic manipulation. However, he does play soccer on a regular basis. At the time of examination in the emergency department the patient only had left sided hemicrania. Physical and neurological examination was unremarkable and revealed no focal signs. Cerebellar tests were normal. An initial non-contrast CT Brain was ordered in view of new unexplained neurological symptoms and revealed multiple low density non-haemorrhagic lesions in the left cerebellar hemisphere and pons. No subarachnoid haemorrhage was demonstrated. Aspirin and enoxaparin were given as antithrombotic therapy to prevent embolism. T2 flare images and diffusion weighted MRI sequences showed acute non-haemorrhagic left sided cerebellar infarcts (Figure 1). This was followed by CT angiography which revealed a free floating thrombus in the horizontal part of the distal left vertebral artery. Contrast flowed around the thrombus with no current angiographic features of obstruction or dissection (Figure 2). In the absence of obvious angiographic evidence of arterial dissection we postulated that spontaneous CAD occurred and that the ensuing intramural thrombus opened distally resulting in thrombus formation in the vessel leading to the above ischaemic symptoms. In view of the presence of thrombus formation full anticoagulation was commenced with warfarin and aspirin was continued. Enoxaparin was discontinued once a therapeutic INR was reached. Hemicrania gradually subsided over 48 hours. The patient was discharged on Warfarin and aspirin and advised to avoid any contact sports chiropractic neck manipulation, and any activity that involves abrupt rotation and flexion-extension of the neck. The patient will be reassessed clinically and angiographically in 3 months. If symptom free and angiography reveals normal vasculature Warfarin will be discontinued and the maintenance therapy will include dual antiplatelet agents.

Discussion
Spontaneous CAD is a relatively uncommon, but important cause of morbidity in young patients presenting with suspected stroke or transient ischaemic events [1]. The reported annual incidence has been estimated at up to 1.5 per 100,000 [3]. The etiology of spontaneous CAD is largely unclear, but the following predisposing conditions have been repetitively implicated but not systematically reviewed: migraine, hypertension, hereditary connective tissue disorders such as...
Ehlers-Danlos syndrome and Marfan syndrome, recent respiratory tract infection, the use of oral contraceptive agents, hyperlipidaemia, previous and current smoking, coagulopathies and substance abuse [4-7]. Previous CAD is regarded an important risk factor with a reported recurrence rate of 3-8% [8]. Possible pathogenetic factors include hyperextension of the neck, particularly recent cervical manipulation, as well as seasonal variation with a higher incidence reported during autumn [9,10]. This variation is thought to be due to an increase in respiratory tract infections during this period.

Common presenting symptoms include isolated headache, posterior neck pain or both. A case series of 20 patients with sCAD done by Arnold et al. [5] revealed that 30% presented with headache posterior neck pain or both. A case series of 20 patients with sCAD an increase in respiratory tract infections during this period. Especially in young patients presenting to the emergency department with an atypical history or sings, the treating physician must have a high index of suspicion for CAD. CT angiography has a high sensitivity for the diagnosis of CAD and was previously considered the "gold standard" for the diagnosis of CAD however MRI and magnetic resonance angiography, that also poses a high sensitivity by revealing the intramural haematoma and luminal stenosis or occlusion, replaced the conventional CT angiogram. Transcranial Doppler studies may reveal lesions in the vertebral arteries in the neck. Thorough cardiovascualr investigations, including a heart sonar and electrocardiography are indicated to rule out cardiac and aortic pathology. Evaluation for coagulopathies is also indicated. The patient's history will provide guidance for the indication of other special investigations like screening for anti- phospholipid syndrome and other genetic or acquired coagulopathies [7,15].

Several medical and surgical approaches are available for the immediate management of CAD. A uniform approach is lacking, most likely due to the absence of randomized trials. Most importantly a subdural haemorrhage has to be excluded. Patients presenting within 3 hours of initial presentation and not posing a definite contra-indication for thrombolysis, the administration of intravenous tissue plasminogen activator (t-PA) may enhance neurological recovery. Optimal brain perfusion is important [7]. Endovascular vertebrobasiler angioplasty and stenting are technically very difficult procedures and has a high complication rate but is used if medical therapy is contra-indicated or has failed. Endarterectomy for severe extracranial vertebral artery disease, when conducted by an experienced surgeon, has a relative low complication rate [7,15,9]. Anticoagulation with intravenous heparin followed by Warfarin anticoagulation with target International Normalized Ration (INR) of 2-3 for three to six months is usually recommended although no clear guidelines are available. Some authors recommend a follow up MRI after three months and suggest a change to anti platelet therapy if intraluminal irregularities are present [9].

**Conclusion**

Especially in young patients presenting to the emergency department with an atypical history or sings, the treating physician must have a high index of suspicion for CAD.

**References**

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