

## CASE REPORT

# Sternal Cleft With Coarctation of Aorta and Vascular Anomalies - Learning Point in Young Stroke

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### ABSTRACT

Sternal cleft is a rare congenital anomaly that is known to be associated with other congenital abnormalities in particular coarctation of aorta and vascular anomalies. We present a case of a young teacher who presented with recurrent episodes of ischemic stroke. During the workup to look for the cause of stroke, it was discovered that this patient had complete midline sternal cleft with underlying coarctation of aorta and left subclavian artery aneurysm. We wish to highlight the relation between the presence of sternal cleft and coarctation of aorta as well as vascular anomalies as one of the rare cause of young stroke.

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### INTRODUCTION

Sternal cleft is a rare congenital anomaly that results from failure of sternal fusion early during embryological development (1). It is usually diagnosed based on clinical examinations and chest radiograph. However, Computed Tomography (CT) Thorax remains as the gold standard to ascertain and characterize the extent of the sternal anomaly as well as for the planning of surgical correction. Several literatures have reported the association between sternal cleft with other congenital abnormalities in particular vascular anomalies and coarctation of aorta. However, to date there is no literatures reporting the relationship between the presence of underlying sternal cleft with the higher risk of developing ischemic stroke.

### CASE REPORT

We presented a case of 46 years old gentleman, who are from an indigenous group of Sarawak, and worked as a teacher in government school. He was referred to our center for recurrent episodes of ischemic stroke within a period of one-year. The first episode of stroke showed right total anterior circulation infarct, and was started on Tablet Aspirin 75 mg once daily and Tablet Atorvastatin 40 mg once daily. However approximately one year after, he suffered a second episode of stroke

with posterior circulation infarction involving bilateral cerebellum and left pontine. On clinical examination his blood pressure ranged from 100-110/80-90mmHg with heart rate ranging from 70-80 beats per minute. He had mild left sided weakness with the power of 4 over 5 involving both the left upper and lower limbs. Normal tone and reflexes in the left upper limb with mild increased in the tone and reflexes in the left lower limb. No contractures of the joint documented. He was ambulating with walking stick when he came for his clinic follow up. Cranial nerves examinations are normal. He was a social smoker, however he had stopped smoking 3 months after the first episode of stroke. There was no family history of cardiovascular or cerebrovascular events.

CT Angiogram (CTA) of Brain, Neck and Thorax as part of workup for young stroke showed a narrowed segment of aortic arch after the origin of left subclavian artery, approximately 4cm in length suggestive of coarctation of aorta (Figure 1). The diameter of this narrowed segment measured 1cm. There are mural thrombi at the proximal part of this narrowed segment, immediately below the ostium of left subclavian artery. This narrowed segment of aorta is tortuous and curved superiorly, with evidence of post narrowing dilatation of the aorta (Figure 1). There is also fusiform aneurysm of left subclavian artery after its origin from the aortic arch (Figure 2). The aneurysm measures 3.6cm in diameter and 5.6cm in length. The aneurysm covers the ostium of left vertebral artery and left internal mammary artery. Distal left subclavian artery is normal in caliber. CTA of the neck also showed long segment non-opacification of proximal right vertebral