

A Radiological Approach to Ischemic Stroke in a Young Adult Non Hypertensive Patient

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Received: February 08, 2024; Published: February 16, 2024

DOI: 10.31080/ECPE.2024.13.01415

Abstract

Stroke is the second leading cause of death above the age of 60 years, and the fifth leading cause in people aged 15 to 59 years old as reported by the World Health Organization global burden of diseases [1].

Hypertension is the leading risk factor for stroke in Tanzania, and its early detection, treatment and management cannot be overemphasized. Previous studies in SSA have demonstrated that 45% of all strokes could be prevented by simply measuring and controlling blood pressure. It is notable that in Tanzania, stroke occurs at a much younger age with later presentation associated with devastating outcomes. Hospital-based studies have reported early mortality ranging from 30 - 60% [2].

Other related known modifiable risk factors for stroke, of which smoking, and hypercholesterolaemia have been mentioned [3].

HIV infection is a notable finding, and associated with an increase of five times in risk of stroke [3].

Stroke in the young is particularly tragic because of the potential to create long-term disability, burden on the victims, their families, and the community at large.

Despite this, there is limited data on stroke in young adults, and its risk factors in Tanzania. Therefore, in this case study we determined important radiological investigation that can possibly establish the diagnosis to this young adult patient who presented with weakness on the left side at Kairuki Hospital.

Keywords: Ischemic Stroke; Thrombus; Hypertension

Introduction and Case Report

A 30 year old male, young adult male was apparently well until 3 days prior to attending the hospital, when he started experiencing sudden onset of left sided weakness and mouth deviation to the left side.

The patient reported to have no history of chronic disease like hypertension or diabetes mellitus, prolonged use of medication or intravenous drug abuse.

On examination, the patient was conscious, alert but with a slurred speech.

The cardiovascular system showed normal S1/S2 heart sounds.

The lab investigations done were; D/dimer 595.2, lipid profile, prothrombin time, partial thromboplastin time, renal function time, liver function time which were normal.

Radiological investigations done included:

- Carotid Doppler which showed a soft tissue plaque partially occluding the right internal carotid artery.
- The CT neck angiography showed complete occlusion of the exposed right internal carotid artery by the soft tissue plaque.
- CT Brain which revealed an area of acute infarction covering the right temporal region.

These features are illustrated in the radiological pictures below.



Figure 1: Right internal carotid artery is completely occluded by the soft tissue thrombus as demonstrated in the carotid Doppler study.



Figure 2: Right internal carotid artery is completely occluded by the soft tissue thrombus as demonstrated in the carotid Doppler study, by the arrow.



Figure 3: Right internal carotid artery was partially (halved) occluded by the soft tissue thrombus as demonstrated in the carotid Doppler study, indicated by the arrow.

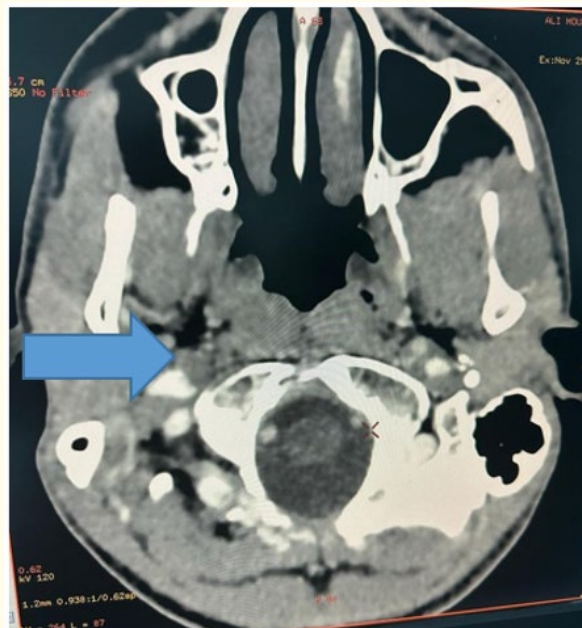


Figure 4: The CT brain angiography axial view shows occlusion of the right ICA.

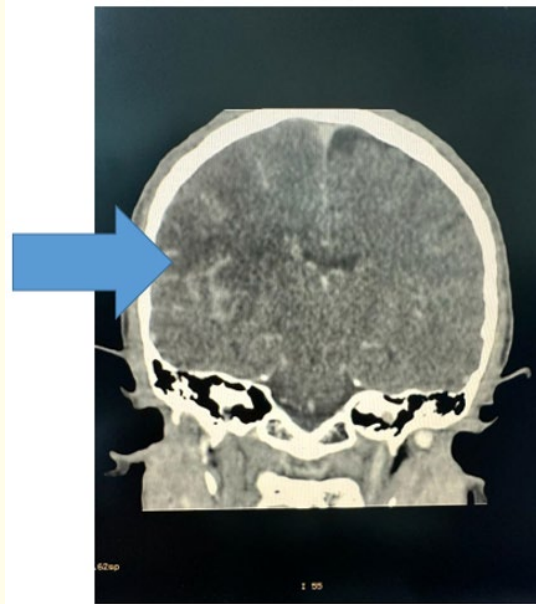


Figure 5: CT brain angiography coronal view shows enlarged right ICA filled with thrombus.

Discussion

The prevalence of carotid stenosis in the symptomatic young adults is 15.8% in patients of age above 35 associated with hypertension and diabetes mellitus [4].

Our case was unusual because the patient is a young adult without chronic disease like DM, HTN but he presented with stroke.

The common causes of ischemic stroke in young adults include carotid dissection and vertebral dissection [5]. However, these findings were absent in our study.

The only finding was thrombosis of the right internal carotid artery with complete occlusion which was supported by a small rise of D/Dimer.

Other associated risk factors of stroke include dyslipidemia, smoking, obesity and illicit drug abuse which were absent in our patient [6].

Rare causes of stroke include other factors which cause hypercoagulable state including protein C and S deficiency, antithrombin 111 deficiency which were not done to our patient because he was lost for follow up [6].

The source of stroke was the complete thrombosis of the right internal carotid artery, however the source of the thrombi was not established, because some of the useful investigations were not done to our patient, because he never came back for follow up.

However, the important information to grab in this case study is that both radiological and laboratory investigations should be fully exhausted in order to establish the cause of ischemic stroke in young adult.

In the gender category studies, it is shown that female patients are more at risk of ischemic stroke compared to males. This is in the contrary to our case report which showed, a male patient with ischemic stroke [7].

Ischaemic stroke seems to be more frequent in patients with HIV, from sub-Saharan Africa, where it is reported in over 90% of HIV-associated strokes. As per our case the patient was screened negative for HIV [8-11].

Conclusion

The study was well prepared to create awareness among clinicians that adequate utilization of the radiological imaging is very important in establishing the diagnosis.

The patient was started on rivaroxaban and iv heparin and immediate improvement like lifting the arm were quite remarkable.

It's true that supportive investigations like d/dimer and others mentioned above are also important which were not much exhausted because the patient was lost to follow up.

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Volume 13 Issue 3 March 2024

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