

The African Journal of MEDICINE and Medical Sciences

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Volume 10
1981

BLACKWELL SCIENTIFIC PUBLICATIONS
Oxford London Edinburgh Boston Melbourne

THE VALUE OF ANGIOGRAPHY IN THE MANAGEMENT OF STROKE

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Summary

Between 1974 and 1980, about 1000 angiographic studies were performed at the University of Nigeria Teaching Hospital. Sixty seven of them were on patients presumed to have suffered stroke. Thirty-five of the stroke patients had vascular occlusions at various sites and fifteen had intracerebral haematoma. In seventeen patients other conditions mimicking stroke were unmasked.

It is strongly recommended that cases of stroke should have the benefit of angiographic investigations which could unmask other lesions that often mimic stroke but are amenable to surgical treatment.

Résumé

Entre 1974 et 1980 une millaine d'études angiographiques étaient exécutées à l'Université du Nigeria dont soixante-sept étaient présumées d'avoir souffert un coup de sang (stroke). Trente-cinq de celui-ci avaient des occlusions vasculaires à divers endroits tandis que quinze avaient l'hématome intra cérébral. D'autres cas ressemblant au coup de sang étaient démasqués dans dix-sept patients.

Il est fortement à conseiller que les cas de coup de sang doivent aussi profiter des études angiographiques qui serviraient à extérioriser d'autres lésions ressemblant souvent au coup de sang mais qui sont faciles à traiter chirurgiquement.

Introduction

Hippocrates was the first to use the term 'apoplexy' to describe ischaemic cerebrovascular disease. The original Greek word meant to 'strike down'. The word 'carotid' derived from Greek literally means to 'stupefy' or 'to plunge into deep sleep'. The relationship of stroke to any compromise in carotid artery blood flow is thus evident.

The pathological relationship was highlighted by Abercrombie (1828) and later by Todd (1844), Virchow (1856) and Gowers (1875). The works of Chiari (1905), Hunt (1914) and Fisher (1951, 1954) laid solid foundations for our present understanding of stroke.

Stroke syndrome can be classified into three categories — transient, developing and completed. In transient strokes (TIA) the neurological defect is short lived and the patient has no symptoms or signs in between attacks. In completed stroke, some permanent neurological deficit remains. Stroke is a relatively common problem in Nigeria. Osuntokun, Odeku & Adeloje (1969) and Osuntokun *et al.* (1979) have reported on their experience at Ibadan. Williams, Resch & Loewensen (1969) studied cerebral atherosclerosis at Ibadan and concluded that it was not uncommon although less so than in American negroes.

Many patients with stroke are referred to the University of Nigeria Teaching Hospital for treatment. Only a small percentage of these are subjected to detailed neuroradiological evaluation. The majority are managed conservatively by physicians on the assumption that no surgical treatment is possible.

This paper describes our experience at Enugu, over the last 6 years.

Method

All carotid angiographic studies carried out at the University of Nigeria Teaching Hospital between January 1974 and April 1980 were reviewed. Percutaneous common carotid angiography under local anaesthesia was the method of choice. The angiograms of the stroke patients were then studied in detail.

Results

About 1000 carotid angiograms were performed during the period under review. Sixty-seven of them were on patients who were referred to us with the clinical diagnosis of stroke. No patient died as a result of the angiographic studies.

Analysis of the sixty-seven cases of stroke (Table 1) revealed that vascular occlusions were the most frequent causes of stroke. The anatomical distribution of the occlusions is also shown in the Table. It is appreciated that the common carotid artery (Fig. 1) and the internal carotid arteries (Figs 2 and 3) are the most favoured sites.

TABLE 1. Angiographic findings in stroke at Enugu

Lesion	No. of patients
Vascular occlusions	35
Common carotid	17
Internal carotid	10
Middle cerebral	5
Anterior cerebral	3
Cerebral haematoma	15
Subdural haematoma	10
Aneurysms	4
Tumours	3
Total	67

Surprise findings

Seventeen patients who were referred to us as cases of stroke were found to have other conditions causing their neurological illness. Subdural haematoma was demonstrated in ten patients. Intracranial aneurysms were unmasked in four patients — two of them had anterior communicating artery aneurysm (Fig. 4) while the other two had posterior communicating artery aneurysms.



FIG. 1. Lateral view of a common carotid angiogram showing complete occlusion of the artery (arrow). The needle seen near the artery was in the opposite common carotid artery.

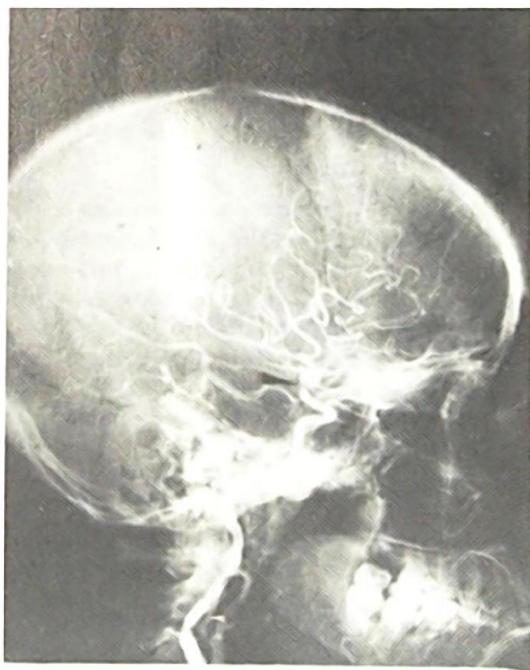


FIG. 2. Lateral view of a carotid angiogram showing stenosis of the terminal part of the internal carotid artery (arrow) and poor filling of the anterior cerebral artery.

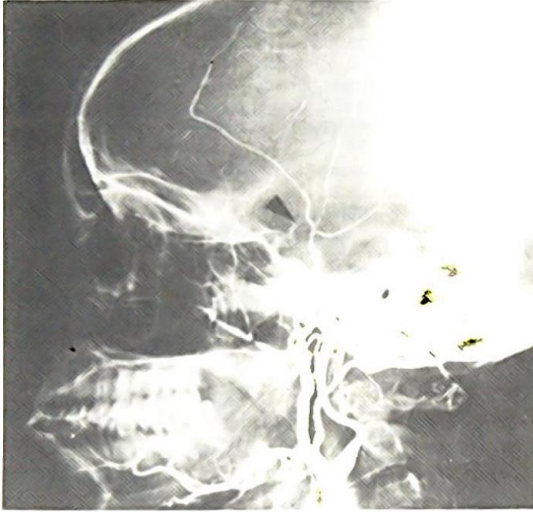


FIG. 3. Lateral view of a carotid angiogram showing complete occlusion of the internal carotid artery at the level of the anterior clinoid process (arrow). Note also the narrowing of the same artery just distal to the common carotid bifurcation.

Tumours were the causes of sudden neurological deficits which mimicked stroke in three patients. One of them was a sphenoid ridge meningioma while two others were gliomas.

Discussion

The old argument against the aggressive investigation of stroke patients was that there was no place for surgery in their management. This is no longer true. Surgery is now the treatment of choice in patients with TIAs who have proven stenotic lesions of the carotid artery. Extracranial stenotic lesions could be reconstructed by endarterectomy or segmental replacement. Revascularization of intracerebral vessels by means of the superficial temporal artery has become an established procedure. Large intracerebral haematomas benefit from surgical evacuation.

The most impressive reward in the investigation of 'stroke' is the harvesting of unsuspected cases of subdural haematoma. It is well recog-



FIG. 4. Antero-posterior view of a carotid angiogram showing an anterior communicating artery aneurysm (arrow).

nized that this condition could mimic stroke but prompt evacuation is usually associated with complete recovery.

Intracranial aneurysms occasionally also mimic stroke especially middle cerebral and anterior communicating artery aneurysms. It is interesting that we have not encountered any middle cerebral artery aneurysm at Enugu and two of our only three anterior communicating artery aneurysms presented as stroke. During the same period only fourteen cases of intracranial aneurysms were diagnosed in our centre, four of whom were referred to us as stroke. This suggests that our claim about the rarity of such aneurysms in Africa (Ohaegbulam, 1978) deserves further evaluation.

That intracranial tumours could bleed and therefore be of acute onset has been documented by Cushing (1938) Askenasy (1960) and Ohaegbulam (1977).

Since the clinical diagnosis of stroke could be erroneous, the neuroradiological investigation

of stroke is mandatory not only to assist in formulating distinct guidelines for treatment but also in unmasking other lesions that may sometimes mimic stroke.

Acknowledgment

The author gratefully acknowledges the help of the Departments of Radiation Medicine and the Medical Illustration Unit of the University of Nigeria Teaching Hospital.

This work was funded by a grant from the Medical Research Council of Nigeria.

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(Received 25 July 1980; accepted 2 October 1980)

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