

SUBARACHNOID HAEMORRHAGE OF UNKNOWN AETIOLOGY—A CLINICO-RADIOLOGICAL ANALYSIS OF 22 CONSECUTIVE CASES IN THE MALAYSIAN POPULATION

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SYNOPSIS

Over the last 8 years, 22 consecutive cases of subarachnoid haemorrhage were found to have no obvious cause on angiography. The age, neurological status and CT-scan appearance in 16 cases were studied together with the completeness and quality of the angiogram. Limited angiography was done in cases with advanced age, poor neurology or severe hypertension. There is a need for more repeat angiographic studies in the presence of vasospasm whether focal or generalised, as indicated by the fact that only 5 out of the 17 cases with vasospasm had repeated satisfactory studies.

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INTRODUCTION

Although there have been numerous studies on subarachnoid hemorrhage due to aneurysms and arterio-venous malformations, relatively few papers had been published regarding subarachnoid hemorrhage with unknown aetiology^(1, 2, 3, 4, 5, 6) although they constitute a fairly large proportion of all cases of subarachnoid hemorrhage.⁽⁷⁾ To-date, there has not been any study about subarachnoid hemorrhage of unknown of unknown aetiology in the Asian populations other than Japan and India. Because of the widespread feeling in the Western World that the low incidence of aneurysms detected in the Asian and South East Asian populations is probably due to poor case detection and inadequate or poor quality angiography in cases of proven subarachnoid hemorrhage, there is a dire urgency to look into our local data concerning the clinical features and radiological appearances including angiogram and CT-scans. The requirement for such study however is that the neurological, neurosurgical and neuroradiological services must be adequate.

The University Hospital in Kuala Lumpur, Malaysia is a large teaching hospital with adequate trained neurologists, neurosurgeons and radiologists especially over the last 8 years with a standard equivalent to most centres in the United Kingdom. With the aim of proving or disproving the Western sentiment the author decided to study those cases presented to this hospital over the last 8 years.

MATERIAL AND METHOD

Between April 1979 and April 1987, a total of 88 cases of subarachnoid hemorrhage presented to the University Hospital, Kuala Lumpur. 5 cases could not be traced and out of the 47 cases who had angiography, no obvious underlying cause for the bleeding was found in 22 cases. The hospital admission was between 27700 to 30700 annually.

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The author had reviewed all the case records of these 22 patients personally.

The patients were studied with respect to the age, sex, hypertension, neurological grading, CT-scans appearance where available, the adequacies of angiography, angiographic presence of vasospasm and neurological status on follow-up.

The neurological grading is according to that of Hess and Hunt⁽⁸⁾ and positive lumbar puncture is defined as the presence of uniformly blood stained or Xanthochromic Cerebrospinal fluid in at least 2 samples.

CT scanning was first available in 1979 in Kuala Lumpur and 1981 in the University Hospital. It is the investigations of first choice for patients with altered consciousness or with lateralising neurological signs for the last few years.

RESULTS

Incidence by Age and Sex

The incidence of hospital admission for subarachnoid hemorrhage of unknown aetiology was 9 per 100,000. There were 13 male and 9 female patients over a 8 year period. The age incidence is summarised in Table 1. Hypertension was present in 11 cases.

Table 1
AGE AND SEX DISTRIBUTION OF 22 CASES OF
NEGATIVE ANGIOGRAPHY BETWEEN 1979 AND 1987

Age	Sex	
	Male	Female
10-	1	0
20-	2	2
30-	3	2
40-	4	0
50-	2	4
60-	1	1
Total	13	9

Neurological Grading

No patient with Grade V neurological grading (Hess and

Hunt) had been subjected to angiography because of our policy that angiogram should be done only where neurosurgical intervention might be needed. There is a fairly uniform distribution of patients in groups with neurological grading of I to IV (Table 2).

Table 2
NEUROLOGICAL GRADING ACCORDING TO
HUNT AND HESS ON ADMISSION

Neuro Grade	Number
I	6
II	4
III	7
IV	5
V	0

Computerized Tomography Scans Appearances

16 patients had CT scans, 2 of which were normal (Table 3). 4 out of the remaining 6 patients who did not have CT scans was available in the University Hospital and were in neurological Grade I. The remaining 2 patients were in Grade I and II.

Table 3
CT-SCAN APPEARANCE OF 16 CASES OF
SAH WITH NEGATIVE ANGIOGRAPHY

CT-Appearance	No
Blood: Subarachnoid	3
Intracerebral	3
Intraventricular	6
Dilated Ventricles Only	3
Normal	2

Angiographic Features

Our policy was to have bilateral carotid angiography routinely. Vertebral angiography was carried out if the carotid angiograms were negative. Since 1983, 4 vessels angiography or panangiography is the investigation of choice using a transfemoral route. One patient, 64 year old, having severe hypertension 260/160 mmHg and grade III neurology had only a left carotid angiogram based on presence of the contralateral weakness (Table 4). 7 patients had 2 vessels (bicarotid) angiogram only because of poor neurological grading, severe hypertension or advanced age. One patient in this later group had leprosy.

Table 4
COMPLETENESS OF ANGIOGRAPHY

Types	No
Carotid	8
1 Vessel only	1
2 Vessels	7
Panangiography	14

Table 5
ANGIOGRAPHIC APPEARANCE OF 22
CASES SAH WITH NEGATIVE ANGIOGRAMS

Appearance	No
Normal	15
- 4 vessels	10
Spasm	7
- Focal	5
- Generalised	2

When the angiographic appearances of these patients were reviewed, 15 were found to have normal appearance

(Table 5). 5 of the 10 patients who had normal panangiography had repeated studies between 5 days to 2 years because of the initial presence of focal vasospasm. Radiological vasospasms both generalised and focal were found in 7 other patients.

One patient had craniotomy for evacuation of temporal lobe intracerebral hematoma.

Neurological Status on Follow-up

These were classified into good recovery, moderate disability or severe disability according to Glasgow Outcome Scale.⁽⁹⁾ 60% of the patients had a good recovery while the rest were mostly moderately disabled. The follow-up period ranged between 1 to 95 months with 5 patients having no follow-up. The average follow-up period was 36 months. There was not a single case of rebleeding surprisingly in this series.

Table 6
NEUROLOGICAL STATUS ON FOLLOW-UP
OF 22 CASES WITH NEGATIVE ANGIOGRAMS

Outcome	No
Good recovery	13
Moderate disability	8
Severe disability	1
Vegetative/Dead	0

DISCUSSION

Our results show that these 22 cases of subarachnoid hemorrhage with negative angiography were fairly evenly distributed among the various age groups and neurological gradings. Of those 16 cases in which CT scans were done, definite abnormalities such as blood in the subarachnoid space, cerebral hemisphere or ventricle and hydrocephalus could be detected in 14 cases (88%). Our present Pfizer CT-scan with its resolution could not rule out the presence of thin subarachnoid hemorrhage. Indeed, lumbar puncture was positive in all these cases. A point noteworthy is that there has been a change in our policy recently that CT-scan should be the investigation of first choice in the presence of latered consciousness or lateralising signs because of the risk of deterioration in the presence of intracranial mass lesion and raised intracranial pressure.^(10, 11)

Our incidence of 46% negative angiography rate in subarachnoid hemorrhage is twice higher than the 20% of Lockley's series.⁽⁷⁾ This calls for detailed study of the quality and completeness of the angiograms done. 14 (64%) panangiographic procedures were performed. The eight remaining patients had limited angiography because of advanced age, poor neurological status or the presence of severe hypertension. When the quality of the angiographic pictures were scrutinized, 15 cases were found to be normal including 10 panangiographic procedures. Half of the 10 cases with panangiography had undergone a former similar procedure but was found to have vasospasm involving one of the blood vessels. 7 other patients (30%) had radiographical vasospasms but the procedures were not repeated. It thus seemed likely that if repeat 4 vessels angiography were done in these 7 patients, aneurysms may be detected in some cases.

Follow-up of these patients revealed no rebleeding within a mean period of 36 months. The cooperative study revealed a 1% rebleeding rate.⁽⁴⁾ The recovery of these patients was in general satisfactory. 13 (60%) had a good recovery while 8 (36%) were moderately disabled at follow-up. None of our patients was vegetative or dead.

It is possible that these cases of subarachnoid hemorrhage may have aneurysms undergoing thrombosis or destruction at the time of hemorrhage and thus giving rise to negative findings during angiography and also a very low incidence of rebleeding.⁽³⁾ The presence of poor neurology,

advanced age or severe hypertension had led to limited angiography rather than complete 4 vessels investigation. However, the present goal that clinicians must aim at is to insist on good quality angiographic pictures in several projections. In the presence of radiological vasospasm, a repeat

panangiography may be performed 6 weeks later when spasm would have subsided or the neurological status had improved. Only then, our data of subarachnoid hemorrhage in this region will be comparable to that in the Western countries.

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