

Clinical Profile Of Posterior Circulation Stroke In A Tertiary Care Centre In Southern India

KORA.S.A, DODDAMANI.G.B, PRAMILA DEVI, GOORANNAVAR S.M, BIRADAR SATISH

ABSTRACT

The present study has been undertaken in a tertiary care centre in southern India to know the clinical profile of posterior circulation stroke as there are few studies for the same in that mainly the New England Medical Center – Posterior Circulation Stroke Registry. To the best of our knowledge there are no studies available in literature regarding posterior circulation hemorrhagic strokes in India.

A total number of 25 cases were studied during the period from Jan 2010 to Dec 2010 who were admitted to department of Medicine and Neurology in S.Nijalingappa Medical College and HSK Hospital & Research Center.

Detailed clinical history was taken in all patients with general physical examination. CBC, urine analysis, random blood sugar, blood urea, serum electrolytes, lipid profile, ECG, CXR, and CT

scan were done. In some selected cases CSF analysis, EEG and ECHO were done.

Incidence of posterior circulation strokes was 12.31 % and male to female ratio was 3.1:1. Amongst posterior circulation strokes, ischaemic were far commoner than haemorrhagic (76% vs. 24%). The common manifestations were motor disturbances, altered sensorium, headache, speech and visual disturbances in ischaemic strokes. Altered sensorium was present in all cases of haemorrhagic strokes. The commonest predisposing factors were tobacco abuse and hypertension. The commonest neurological findings were altered sensorium, motor disturbances, cranial nerve involvement and cerebellar signs. Infratentorial infarcts were seen more frequently than supratentorial infarcts, in this study. Incidence of mortality was higher in haemorrhagic strokes than ischaemic strokes (50% vs. 26.3%)

Key Words : Posterior circulation strokes, haemorrhagic strokes, ischaemic strokes

INTRODUCTION

Cerebrovascular accidents have been known since ancient times because of the characteristic clinical picture they produce. Hippocrates (470 – 370 B.C.) described stroke as 'APOPLEXY', which means astonishment. Leoniceo described syphilitic hemiplegia in 1497. [1]

In 1911 Margurg first reviewed the topic of brain stem infarction & described clinical examples of basilar territory syndromes. In 1932 Pines & Gilinsky published detailed report that included serial section of brain stem in a patient with thrombosis of basilar artery. [2]

The World Health Organization (WHO) defines stroke as "rapidly developing clinical signs of focal (or global) disturbance of cerebral function, with symptoms lasting 24 hours or longer or leading to death, with no apparent cause other than vascular origin". [3]

The National Institute of Neurological Disorders and Stroke (NINDS) apply the term stroke to "any one or all of a group of disorders including cerebral infarction, intracerebral haemorrhage or subarachnoid haemorrhage".[4]

Posterior circulation strokes account for 10 to 15% [5] of all strokes. The area includes brainstem, cerebellum, occipital lobes and thalamus and is supplied by 2 vertebral arteries, 1 basilar artery and 2 posterior cerebral arteries[6]. Posterior circulation ischaemia ranges from fluctuating brainstem symptom caused by intermittent insufficiency to many syndromes like lateral medullary, medial medullary, locked in to top of basilar syndrome [7].

There are no data available to reflect the true incidence of cerebrovascular disease in Indian population. There are no hospital statistics available for posterior circulation strokes in India, because there is no study conducted in India about the epidemiological incidence. Hence, we have decided to study the clinical profile of posterior circulation stroke, as there are very few studies available in literature.

MATERIAL AND METHODS

This study was conducted during the period from Jan 2010 to Dec 2010. During this period all posterior circulation strokes admitted to Neurology and Medicine departments of S.Nijalingappa Medical College and HSK Hospital & Research Centre were studied. This study consisted of total 25 posterior circulation strokes.

INCLUSION CRITERIA

All posterior circulation strokes were included during the study period. The diagnosis of posterior circulation was made when the patient had a clinical stroke syndrome compatible with involvement of posterior circulation territory with the help of clinical signs and symptoms and by means of classical syndromes like Claude's, Weber's, Balint's, Lateral medullary, Medial medullary, Locked in & top of basilar syndromes.[7]

EXCLUSION CRITERIA

If CT scan showed recent infarction, haemorrhage in the anterior circulation and other non-vascular lesions, and then they were excluded from the study sample.

CLINICAL STUDY

A detailed history was obtained from the patient or a close relative regarding the onset of stroke, risk factors and family history.

A detailed physical examination was done according to the proforma including vital signs & detailed examination of other systems. Optic fundus was examined in all the cases.

INVESTIGATION

All the patients were investigated for CBC, ESR, urine analysis, random blood sugar, blood urea, serum electrolytes, lipid profile, RA factor, VDRL, ECG & chest radiography. CT scan was done, in all patients in the study whenever needed CSF, EEG & ECHO was also done.

OBSERVATION & RESULTS

During the study period the total number of strokes were 203 and percentage of posterior circulation stroke was 12.31% of all strokes. Stroke was more common in the middle aged and elderly. Ischaemic stroke was more common in age group 41 to 50 and haemorrhagic stroke in age group 71 to 80.

Type Of Stroke	Infratentorial		Supratentorial		Both	
	No.	%	No.	%	No.	%
Ischaemic	10	52.6	06	31.6	03	15.8
Haemorrhagic	05	83.3	01	16.6	-	-

[Table/Fig: 1]: Type Of Stroke

The male to female ratio of stroke was 3.1:1 and both ischaemic and haemorrhagic strokes were more common in males. 76% of the patients had ischaemic strokes and 24% had haemorrhagic strokes.

Infratentorial stroke was common in both ischaemic and haemorrhagic stroke. The entire group of haemorrhagic stroke patients presented with acute completed stroke and where as only 52.63% of ischaemic stroke patients had acute completed stroke and 47.36% had stepwise progression.

MANIFESTATION	ISCHAEMIC STROKE		HAEMORRHAGIC STROKE	
	No. Of Patients (N=19)	%	No. Of Patients (N=06)	%
Altered sensorium	11	57.8	06	100
Vertigo	08	42.1	01	16.6
Headache	11	57.8	04	66.6
Vomiting	09	47.4	04	66.6
Ataxia	07	36.9	-	-
Speech Disturbances	09	47.4	01	16.6
Visual Disturbances				
(Blurring & Blindness)	09	47.4	01	16.6
Diplopia	03	15.8	-	-
Motor Disturbances	12	63.2	02	33.3
Sensory Disturbances	01	05.3	-	-
Convulsion	02	10.5	-	-

[Table/Fig: 2]: Clinical Manifestations

PREDISPOSING FACTORS	ISCHAEMIC STROKE		HAEMORRHAGIC STROKE	
	No. Of Patients (N=19)	%	No. Of Patients (N=06)	%
Hypertension	07	37.0	04	66.6
Diabetes	01	05.0	-	-
Tobacco Abuse	10	52.6	04	66.6
Alcohol	04	21.0	04	66.6
Hyperlipidemia	02	10.5	-	-
TIA	-	-	-	-
Stroke	-	-	01	16.6
RHD	01	05.0	-	-
IHD	01	05.0	-	-
MVP	03	15.8	-	-

[Table/Fig: 3]: Predisposing Factors

[Table/Fig-2] shows frequency of clinical manifestations at the time of admission to hospital. The most frequent manifestation was motor dysfunction in 63% of ischaemic strokes and history of altered sensorium was 100% in haemorrhagic strokes.

Features	ISCHAEMIC STROKE		HAEMORRHAGIC STROKE	
	No. Of Patients (N=19)	%	No. Of Patients (N=06)	%
Consciousness Impaired	12	63	06	100
Orientation Impaired	-	-	-	-
Speech Disturbances	07	37	01	16
Memory Impaired	-	-	-	-
Cranial Nerve Involvement	10	53	01	16
Motor Disturbances	12	63	01	16
Sensory Disturbances	01	05	-	-
Cerebellar Signs	07	37	01	16
Nystagmus	06	32	01	16
Meningeal Irritation	01	05	01	16
Fundal changes	07	37	03	50

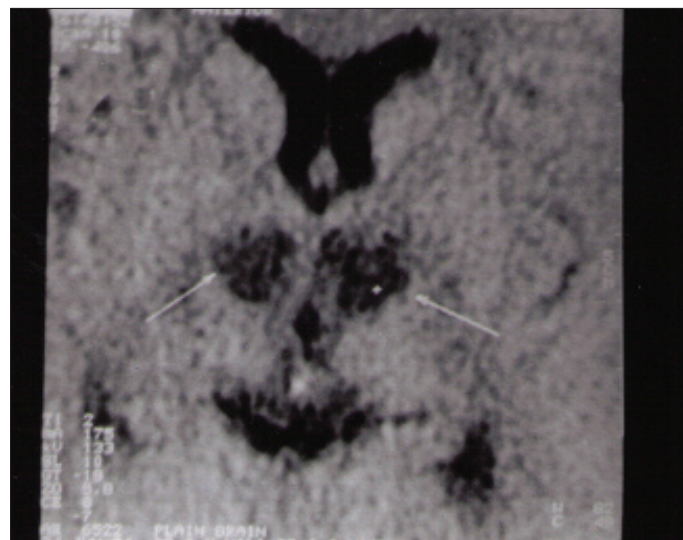
[Table/Fig: 4]: Neurological Findings

In ischaemic stroke the commonest risk factor was tobacco abuse (52%) and the next was hypertension (37%). But in the haemorrhagic strokes the commonest risk factor were hypertension, tobacco abuse and alcohol (All were 66%) The most common neurological findings in ischaemic stroke were altered sensorium and motor dysfunction (Both 63%). The next finding was cranial nerve involvement (53%). In haemorrhagic strokes all patients had altered sensorium.

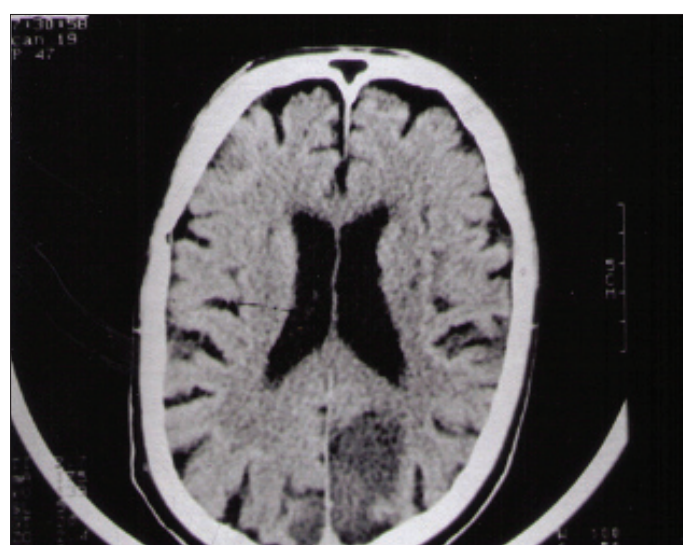
The incidence of infratentorial lesion was more (83%) compared to supratentorial lesion (16%) in haemorrhagic strokes but both are equal incidence (40% each) in case of ischaemic strokes.

Features	ISCHAEMIC STROKE		HAEMORRHAGIC STROKE	
	No. Of Patients (N=19)	%	No. Of Patients (N=06)	%
Infratentorial	06	40	05	83.3
1.Lateral Medulla	-	-	-	-
2.Pons	01	16.6	03	60
3.Mid Brain	-	-	-	-
4.Cerebellum	04	66.6	02	40
5.Brain Stem + Cerebellum	01	16.6	-	-
Supratentorial	06	40	01	16.6
1.Thalamic	01	16.6	-	-
2.Occipital	05	83.3	01	16.6
3.Thalamic-Occipital-Temporal	-	-	-	-
Infra & Supratentorial	03	20	-	-
1.Pons + Occipital	01	33.3	-	-
2.Cerebellum + Occipital	01	33.3	-	-
3.Cerebellum + Thalamic + Occipital	01	33.3	-	-
4.Cerebellum + Pons + Occipital	-	-	-	-
5.Extensive VA (Medulla to Occipital Lobe)	-	-	-	-

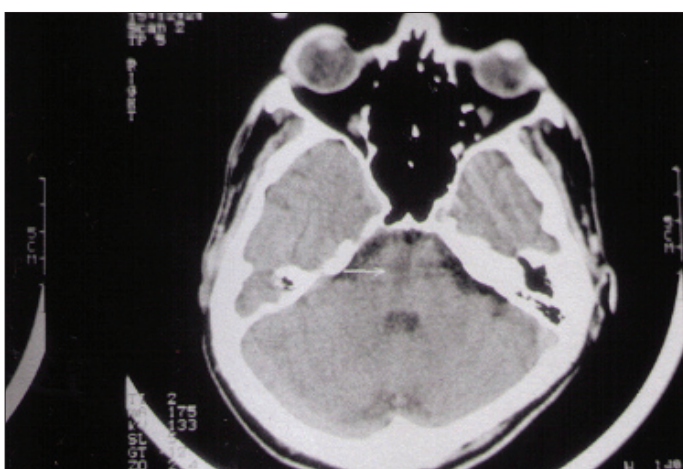
[Table/Fig: 5]: Distribution Of Lesions As Per CT Scan



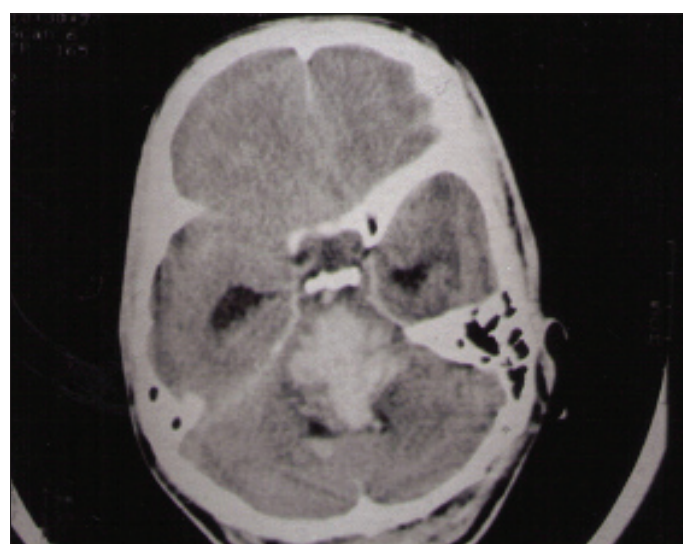
[Table/Fig: 8] – CT Scan Showing Bilateral Thalamic Infarct



[Table/Fig: 9] – CT Scan Showing Bilateral Occipital Infarct



[Table/Fig: 6] – CT Scan Showing Right Pontine Infarct



[Table/Fig: 10] – CT Scan Showing Pontine Haemorrhage



[Table/Fig: 7] – CT Scan Of The Right Pontine Infarct Patient Also Showing Left Cerebellar Infarct

Mortality in ischaemic stroke was 26.3% and in haemorrhagic stroke it was 50%. Improvement was seen in 47.4% of ischaemic and 50% of haemorrhagic strokes.

DISCUSSION

Twenty five cases of posterior circulation strokes admitted to Medicine and Neurology wards of HSK Hospital & Research

Center during period of 12 months (From Jan 2010 to Dec 2010) were studied for incidence, mode of presentation, pattern, clinical manifestations and neurological findings. To the best of our knowledge there are no studies available in posterior circulation haemorrhagic strokes in India in literature, hence we could not compare clinical profile, risks factor and various other parameters of haemorrhagic posterior circulation strokes.

The incidence of posterior circulation stroke was 12.3% in the study, which was comparable with other studies conducted by Jones et al [8] (17%) and Richard et al 5 (14.8%).

In the present study the incidence of posterior circulation ischaemic strokes in below 60 years age group was 56% which was more compared to Jones et al [8] study (22%), this can be explained on the basis that the incidence of stroke in young is more in India compared to western countries.

Incidence was more in males compared to females was in accordance with other studies like Ma.Cristina L et al [9] study and R.B.Libman et al [10] study.

In the present study incidence of ischaemic strokes was more (76%) compared to haemorrhagic stroke (24%) was in accordance with other studies like Uma Sundar et al [11] (77% ischaemic strokes). Incidence of infratentorial ischaemic strokes was high (63%) compared to other sites in the present study. But the incidence of infratentorial strokes was less compared to Bogouslavsky et al study [12] (70%), this can be explained on the basis that in our study we used only CT scan to identify infratentorial lesion which is a poor diagnostic tool compared to MRI scan.

Incidence of acute completed stroke was 53% and step wise in 47% in the present study, which was in accordance with Patrick et al [13] study. In his study incidence was 44% and 56% respectively.

Manifestations	Patrick et al ⁸ (%)	Present Study %
Altered Sensorium	47	57
Vertigo	30	42
Headache	-	57
Vomiting	30	42
Ataxia	36	36
Dysarthria	28	25
Visual Disturbance	13	47
Diplopia	16	15
Motor Disturbance	43	63

[Table/Fig: 11]: Clinical Manifestations

Majority of clinical manifestations were comparable to the Patrick et al [13] study. The incidence of visual disturbance was high in present study (47%) compared to Patrick et al study [13] (13%). This was due to presence of more number of occipital infarcts in the present study. (32% Vs. 8%)

Incidence of risk factors like hypertension was comparable with the studies by E.Ratnavalli et al [14], Capalan et al [15], and Uma et al [11]. Incidence of alcohol and IHD were same as of E.Ratnavalli et al [14], because study from the same geographic area. Incidence of high tobacco abuse can be explained on the basis that the tobacco abuse is more than this part of state.

Risk Factors	E Ratnavalli et al 14 %	Caplan et al 15 %	Uma et al 11 %	Present Study %
Hypertension	23	61	35.5	37
Diabetes	20	25	21	05
Tobacco Abuse	25	35	47.3	52
Alcohol	25	-	19.7	21
Hyperlipidemia	-	25	44.4	10
RHD	-	-	10.5	05
IHD	05	35	17.1	05
Prosthetic Valves	03	-	-	-
Peripheral Vascular Disease	-	10	-	-
OC Pill Usage	-	-	39.5	-
Migraine	-	-	11.8	-

[Table/Fig: 12]: Incidence Of Risk Factors

Majority of neurological findings of present study correlates well with Patrick et al [13] study.

Neurological Findings	Patrick et al [8] (%)	Present Study %
Consciousness Impaired	47	63
Speech Disturbance	30	37
Cranial Nerve Involvement	64	53
Motor Disturbance	43	63
Cerebellar Signs	29	37
Nystagmus	29	32
Sensory Disturbances	17	05
Meningeal Irritations	-	05
Fundal Changes	-	37

[Table/Fig: 13]: Neurological findings

Incidence of mortality correlates well with other studies like Patrick et al [13] study (25.6%), Uma et al [11] study (17%) and Jones et al [8] study (27.5%). Incidence of improvement in this study was 47% where as in Jones et al [8] study it was 35%.

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