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AN OBSERVATIONAL STUDY ON INCIDENCE OF CEREBROVASCULAR ACCIDENTS

Barve Sayali Uday[1], Neeraj Kumar Pali[2],Vipra Avinash Tukaram3, Khot Sachin S[4]

[1, 2]PG Scholars, [3,4]Associate professors

Department of Sharir Rachana, YAC PGT & RC, Kodoli, Dist. Kolhapur, Maharashtra, India

ABSTRACT

CVA is the sudden death of neurons in localized area of brain due to inadequate blood supply. The whole pathology of the disease is related to the blood circulation of the brain i.e. the circle of Willis and its branches. The major vessels that supply the brain are anterior, middle and posterior cerebral arteries with their communicating branches and cerebellar and pontine arteries with their branches. Different functional areas of brain are supplied by different blood vessels. Thus, any deformity in specific blood vessel results in the derangement of functions of particular part of brain supplied by that artery. Here, an observational study is done on the incidence of CVA based upon different criteria and conclusions are drawn. This study is helpful to know the status of CVA in present era and will help to aware people regarding the seriousness of the disease.

Key Words: Cerebrovascular accidents, ischaemic and haemorrhagic strokes, circle of Willis
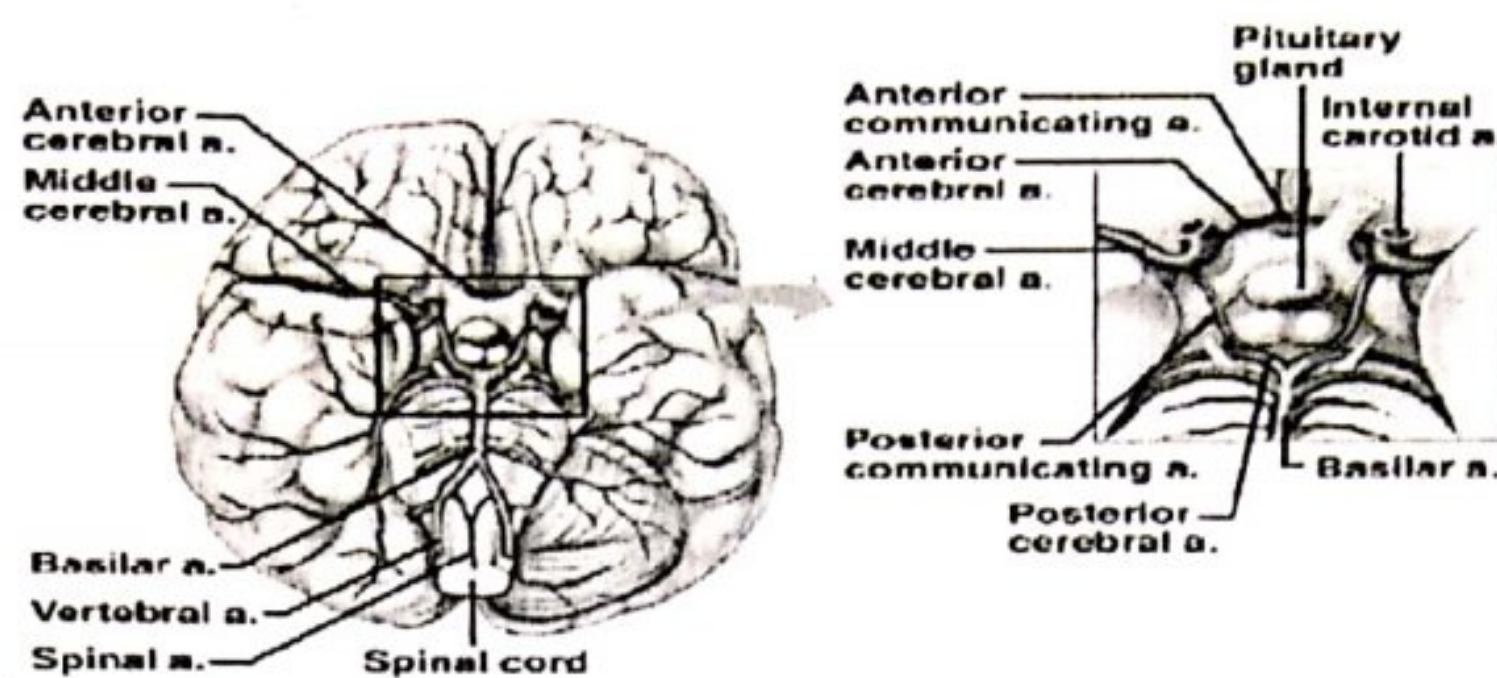
INTRODUCTION

Among all the illnesses, which can blow out life's candle, cerebrovascular accidents (CVA) is the most alarming to the spectator, most grievous to the patient and most baffling to the physician. Here, the patient not only suffers a bodily illness, but also goes through severe mental depression on account of inability to maintain personal hygiene. In today's era, increase is reported in occurrence of this disease, because ironically human's average life span has also increased. Longer the life span, greater are the incidences of atherosclerosis, diabetes mellitus, hypertension which are the principal etiological factors of cerebrovascular accidents.[1]

CVA is the sudden death of neurons in localised area of brain due to inadequate blood supply. It is usually characterised by reversible or irreversible paralysis with other symptoms such as slurred speech, mouth deviation, giddiness, convulsions, headache etc. It is also called as stroke or brain attack. The CVA can either result from the ischaemia i.e. interruption of blood flow to a part of brain by thrombus or atherosclerotic embolus and haemorrhage i.e. rupture of a blood vessel in the brain and spilling of blood into the surrounding areas.[2, 3]

Image[4]: 1

The blood supply to the brain tissue (grey and white matter) is by the blood vessels constituting the circle of Willis.[5, 6] It is mainly formed by the branches of pairs of internal carotid and vertebral arteries. The major vessels that supply the brain are anterior, middle and posterior cerebral arteries with their communicating branches and cerebellar and pontine arteries with their branches.

The signs and symptoms of CVA depend upon certain factors like nature of vascular lesion, duration of ischaemia, region of the brain supplied by the affected vessel etc. Such factors are observed on total no. of 50 patients presented with CVA. The incidences of ischaemia and haemorrhage are determined on the basis of certain points like age, gender, comorbidities, addictions, presentation of disease in each individual. Overall observations are made after studying such 50 patients and conclusions are noted. This study is helpful to know the status of CVA in present era and will help to aware people regarding the seriousness of the disease.

MATERIALS AND METHODOLOGY
Materials
1. Available literature regarding cerebrovascular accidents

2. Total no. of 50 patients showing signs and symptoms of cerebrovascular accidents, selected as per the selection criteria.

Methodology
Study type: - Observational study
1. Literature study:- Collection of information regarding cerebrovascular accidents is done from the available literature sources including books, previous researches, internet sources etc. Detailed study is done regarding the anatomy and physiology of brain as well as pathogenesis of CVA.
2. Total 50 patients are randomly selected who fulfil the inclusion and exclusion criteria and studied in detail regarding the presentation of disease in them along with the allied factors.

Selection criteria
Inclusion criteria:-
1. Age group 20 years and above
2. Both genders
3. With any caste, parity, income group, occupation and addiction
4. K/C/O diabetes mellitus or hypertension or both
5. Patients showing signs and symptoms of neurological impairment

Exclusion criteria:-

1. Accidental head injury
2. Suicidal or homicidal nervous tissue impairment
3. Bleeding disorders
4. Hypokalaemic periodic paralysis
5. G.B. syndrome
6. Patients suffering from severe systemic diseases such as bronchial asthma, cardiac diseases, renal failure etc.
7. Patients on antidepressant and antipsychotic drugs

Withdrawal criteria:-

1. During the course of observational study, if any serious condition or any serious adverse event occurs which require urgent treatment
2. If patient or witness wants to withdraw from study

Investigations: - routine lab and CT scan or MRI whichever needed

Criteria of assessment:-

The collected data is accessed based on various criteria as age-wise, gender-wise classification, patients with comorbidities and various addictions and presentations of disease. The assessed data is divided and grouped in various tables in the section of observations.

OBSERVATIONS

The observed data of 50 patients is grouped and presented in tables as follows-

1. Occurrence of infarct-induced CVA in 50 patients was 38 patients i.e. 76%. Occurrence of haemorrhage-induced CVA in 50 patients was 12 patients i.e. 24%.

2. Age-wise classification(**Table No. 01**)

	20-40 years		40-60 years		60 years and above	
	Infarct	Haemorrhage	Infarct	Haemorrhage	Infarct	Haemorrhage
Total no. of patients	00	00	04	02	34	10
Percentage	00%		12% Out of that, infarct induced- 66.67% and haemorrhage induced- 33.33%		88% Out of that, infarct induced- 77.28% and haemorrhage induced- 22.72%	

3. Gender-wise classification (**Table No. 02**)

	Males		**Females**	
	Infarct	Haemorrhage	Infarct	Haemorrhage
Total no. of patients	32	05	06	07
Percentage	74% Out of that, infarct induced- 86.48% and haemorrhage induced- 13.52%		26% Out of that, infarct induced- 46.15% and haemorrhage induced- 53.85%	

4. Patients with comorbidities of Diabetes mellitus or/and Hypertension (**Table No. 03**)

	Diabetes mellitus	**Hypertension**	**Diabetes mellitus and Hypertension**	**No Diabetes mellitus and No Hypertension**
Total no. of patients	01	29	10	10
Percentage	02%	58%	20%	20%

5. Patients grouped based upon addictions (**Table No. 04**)

	Tobacco	Miseri	Smoking	Alcohol	No addictions
Total no. of patients	10	11	10	02	17
Percentage	20%	22%	20%	04%	34%

6. Observed sites of infarct in patients of ischaemic CVA (Table No. 05)

	ACA territory	MCA territory	PCA Territory	Pons	Cerebellum
Total no. of patients	03	28	03	02	02
Percentage	07.89%	73.86%	07.89%	05.26%	05.26%

7. Observed sites of bleed in patients of haemorrhagic CVA (Table No. 06)

	ACA territory	MCA territory	PCA Territory	Pons	Cerebellum	Sub-dural	Sub-arachnoid
Total no. of patients	00	07	01	01	00	02	01
Percentage	0%	58.33%	08.33%	08.33%	0%	16.67%	08.33%

8. Intra-ventricular extension along with midline shift was seen in 4 patients out of 12 patients of haemorrhagic CVA i.e. 33.33%. The site of bleed was in MCA territory. Out of 4 patients, 3 were males and 1 was female. All patients were K/C/O hypertension.

(Table No. 07)

9. Patients grouped based upon main presentation

Patients of paraplegia and quadriplegia were not found during the study.

(Table No. 07)

Gradation of power in lower limb	Hemiplegia (68%)		Monoplegia (32%)			
	Right	Left	Right		Left	
			Upper limb	Lower limb	Upper limb	Lower limb
00	10	07	01	00	00	00
01	07	05	01	00	00	02
02	02	02	00	00	00	01
03	01	00	00	00	00	00
04	00	00	00	00	00	00
Percentage out of individual category	58.82%	41.18%	40%	00%	00%	60%

10. Observed associated features (Table No. 08)

	Total no. of patients	Percentage
Slurred speech	24	28.57%
Mouth deviation	08	09.52%
Giddiness	16	19.04%
Vomiting	02	02.38%
Headache	06	07.14%

Convulsions	08	09.52%
Urine incontinence	13	15.47%
Tingling numbness	03	03.57%
Drowsiness	04	04.76%

The associated features- convulsions and drowsiness were observed in patients of haemorrhagic CVA only. Giddiness was more common in patients of ischaemic stroke.

DISCUSSION AND CONCLUSION

The study was carried out in two parts. At first, the available literature regarding CVA was compiled and studied in detail.

The CVA is divided into two types based on pathogenesis. The ischaemic kind is a result of interruption of blood flow to a part of brain by thrombus or atherosclerotic embolus whereas haemorrhagic kind is the rupture of a blood vessel in the brain and spilling of blood into the surrounding areas. Although the basic pathology differs the signs and symptoms are usually similar. The basic line of treatment is different for individual type. Thus, it is necessary to diagnose regarding the nature of event i.e. ischaemia or haemorrhage as early as possible, with the help of radiology techniques.

The whole pathology of the disease is related to the blood circulation of the brain i.e. the circle of Willis and its branches. It is mainly formed by the branches of pairs of internal carotid and vertebral arteries. The major vessels that supply the brain are anterior, middle and posterior cerebral arteries with their communicating branches and cerebellar and pontine arteries with their branches. Different functional areas of brain are supplied by different blood vessels. Thus, any deformity in specific blood vessel results in the derangement of functions of particular part of brain supplied by that artery.

Here, an observational study is done on the incidence of CVA based upon different criteria and following conclusions are drawn.
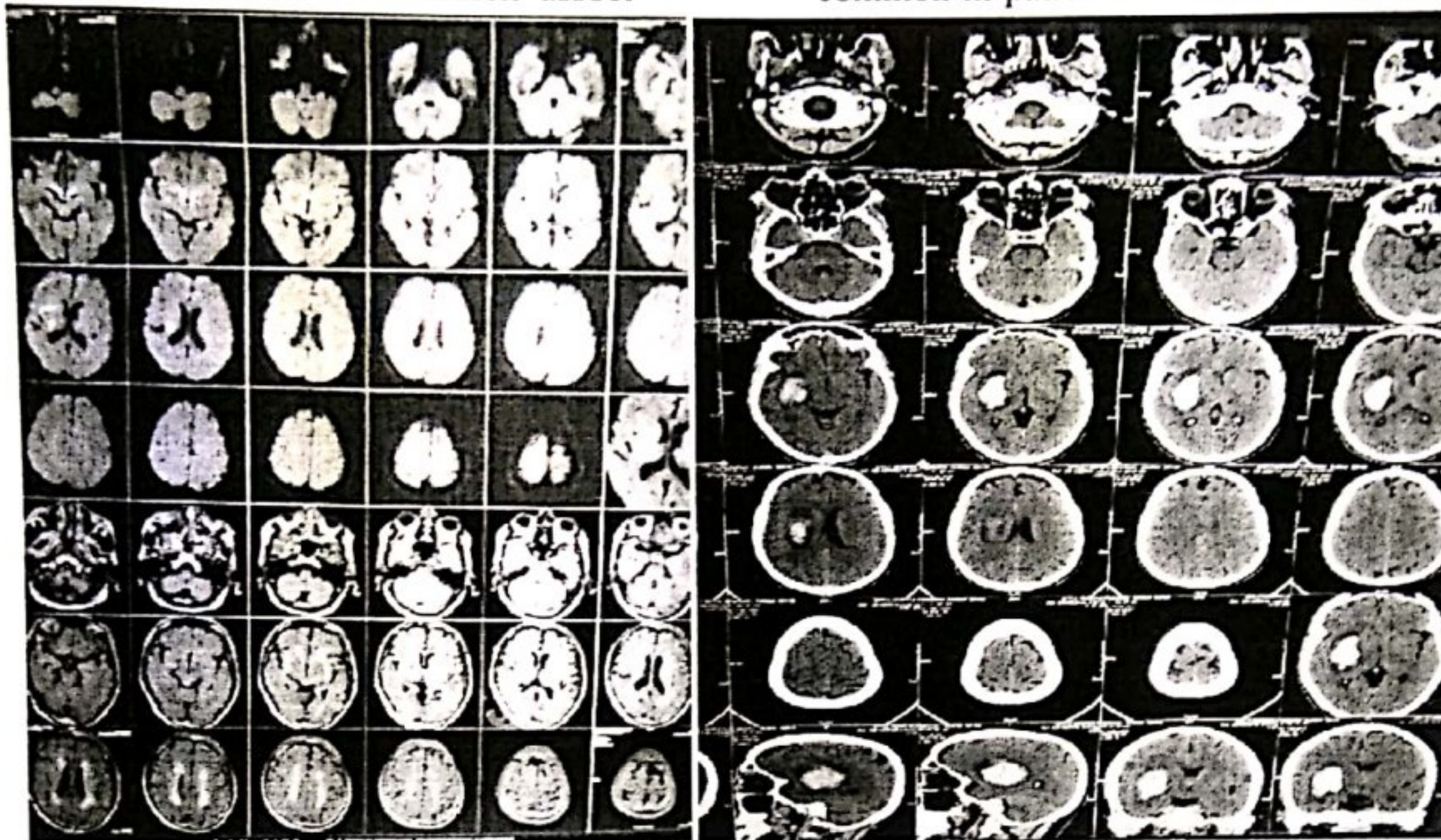
1. CVA resulting from infarct was more common than that resulting from haemorrhage.
2. Elderly age group i.e. 60 years and above was affected more.
3. Males were more affected than females. % of infarct-induced CVA was higher in males whereas haemorrhage was more common in females.
4. Although diabetes mellitus and hypertension are termed as predisposing factors for CVA, patients with hypertension were more affected by CVA.
5. Addictions play a major role as predisposing factor. In this study, 66% patients suffering from CVA were having some kind of addiction.
6. From the CT Scans and MRIs of patients, it is seen that the infarcts and haemorrhages in middle cerebral artery territory were more common. The MCA supplies extensively the sensory and motor areas of brain. Thus, it can be termed as important among all the blood vessels of brain.

   (Photographs showing the infarct and haemorrhage in CT scan / MRI diffusion)
7. Hemiplegia was the main presenting feature in more than 50% of cases. In that

also, right side hemiplegia was more common.

8. Slurred speech, giddiness and urine incontinence were most common associated features. Convulsions and drowsiness were observed in patients of haemorrhagic CVA only. Giddiness was more common in patients of ischaemic stroke.

REFERENCES

1. Dr.Ashutoshpandya, A comparative study of virechana karma and sramsana in the management of Pakshaghat, Dissertation of IPGT&R, Jamnagar, gujarat, Kc-2003, page no.8.
2. Editor in chief Dr.SiddharthShaha, API textbook of medicine, Vol. 02, 8th edition, Reprint 2009, Association of physicians of India, Mumbai, Page no.1156.
3. Braunwald, Fauci, Kasper, Hauser, Longo, Jameson, Harrison's principles of internal medicines, Vol. 02, 15th edition (international edition), 2003, McGraw Hill, Page no. 2369-2381.
4. www.s3amazonaws.com
5. B. D. Chaurasia, Human anatomy, Vol. 03, 4th edition, CBS publishers and distributors, New Delhi, Page no. 383-386.
6. Richard L. Drake, Wayne Vogl, Adam W. M. Mitchell, Gray's anatomy for students, 1st edition, 2005, Elsevier Churchill Livingstone, Page no. 787-791.

CORRESPONDING AUTHOR
Dr. Sayali Uday Barve
PG Scholar, Department of Sharir Rachana
YAC PGT & RC, Kodoli, Dist.
Kolhapur, Maharashtra, India
Email: drsayalibarve16@gmail.com