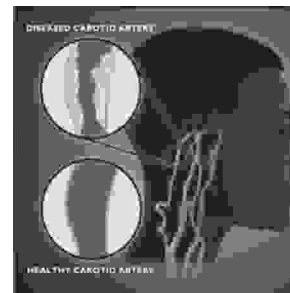


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STROKE; FREQUENCIES OF INTRA-CEREBRAL BLEED, CEREBRAL INFARCTION AND SUB-ARACHNOID HAEMORRHAGE



DR. FRAZ SAEED QURESHI, MBBS, FCPS

Senior Registrar
Medical Unit-III
Allied Hospital, Faisalabad.

DR. RIZWAN RASOOL KHAN, MBBS, FCPS

Medical Specialist
Social Security Hospital, Faisalabad.

DR. AHMED BILAL, MBBS, FCPS

Professor of Medicine
Medical Unit-III
Allied Hospital, Faisalabad.

Dr. Ghazala Khalid, MBBS, FCPS

Medical Specialist
Sialkot.

ABSTRACT... Objective: To find out the frequency of major categories of stroke (i.e. cerebral infarction, intra cerebral hemorrhage and sub-arachnoid hemorrhage) **Design:** A descriptive study. **Place & Duration of Study:** Medical unit III Allied Hospital Faisalabad from January 2005 to June 2005. **Patients and Methods:** 112 patients were enrolled after taking verbal consent. After complete physical examination and investigations a sample size of 100 patients was calculated using 5% level of significant and margin of error as 5%. **Results:** This study revealed frequency distribution of various categories of stroke as cerebral infarction 62 cases (62%), cerebral haemorrhage 30 cases (30%) and sub-arachnoid haemorrhage 8 cases (8%) out of 100 cases in total. **Conclusion:** Intra-cerebral bleed has got a higher trend in Asia than in western countries and is more common in female gender while cerebral infarction is more common in males and its frequency although the highest among the major categories of stroke in Asia but relatively less as compared to that in western countries.

Key words: Stroke, cerebral infarction, sub-arachnoid Haemorrhage, Asia.

INTRODUCTION

The term stroke is used when symptoms begin abruptly as a result of inadequate blood flow (cerebral infarction), haemorrhage into the brain tissue (intra-cerebral haemorrhage) or surrounding sub-arachnoid space (sub-arachnoid haemorrhage). The symptoms should persist for more than 24 hours. Stroke is not only one of the major killers of today but references to it can be traced to

theological writings in ancient Greek literature in which it has been explained in cosmological terms.

Stroke is the 3rd major cause of death worldwide. It occurs more commonly in blacks than in Caucasians. Death rate following a stroke is around 25 %¹. Male genders are more at risk for stroke. Stroke or cerebrovascular disease comprises: Cerebral infarction

85%, Intra-cerebral Hemorrhage 10%, Sub-arachnoid Haemorrhage 5%².

Stroke is uncommon below 10 years of age and its incidence increases with age³. Hypertension is the most important risk factor for all the three major categories of stroke namely cerebral infarction intra-cerebral bleed and sub-arachnoid haemorrhage. Other important risk factors include smoking, sedentary life style Diabetes mellitus; Ischemic heart disease raised hematocrit, atrial fibrillation and postmenopausal women. Incidence of stroke in young is though less but mortality is high⁴. Less common risk factors can be of more value in this case. These include hematological factors (Thrombocytopenia, thrombophilia, proteins C or S deficiency, factor V Laiden deficiency), serological factors (anticardiolipin antibodies Hyperhomocysteinaemia), vascular factors (Migraine, vasculitis amyloidosis), oral contraceptive pills and rare inherited conditions as cerebral dominant arteriopathy with subcortical infarcts and leukoencephalopathy.

Most common presentation of stroke is weakness of one half of the body or imbalance. Non traditional symptoms such as pain, change in the level of consciousness were more commonly reported by women¹.

Stroke affects not only its victims but their care takers and society as a whole as well. It can cause life long disability and a very wide and frequent array of behavioral prolis⁵.

Stroke affects many people in their "golden years" of life, a segment of population that is growing world wide⁶, which is a burden on global economy. Old age, loss of consciousness before admission, severity of hypertension are poor prognostic factors⁷, while post stroke depression is a predictor of poor long term functional outcome⁵.

MATERIALS AND METHODS

A descriptive study of 100 cases was carried out in medical unit-III of Allied Hospital Faisalabad. Allied Hospital is a tertiary care hospital of 1100 beds draining the areas of Jhang, Toba Tek Singh, Samundri, Chiniot,

Sargodha, Faisalabad and Sheikhpura. Medical Unit III of Allied Hospital comprises 54 beds and receives patients via emergency and out patient department. This unit deals with emergency cases 48 hours a week and every 3rd Sunday of a month. Diagnosis was based on C T Scan (brain) of all the patients and all other investigation will be carried out through facilities available at Pathology labs of Allied Hospital Faisalabad.

Data collection carried out after taking history, performing clinical examination and doing investigations. Data was analyzed by using Chi-Square test at 5 % level of significance. Statistical analysis was carried out with the use of SPSS Ver. 8 for Windows. In this study frequency of major categories of stroke found out in relation to different age groups and sex. In this study variables of interest were Diabetes mellitus and Hypertension and association between frequencies of various categories of stroke and irregularly treated Hypertension and Diabetes mellitus was found out.

RESULTS

This study revealed frequency distribution of various categories of stroke as cerebral infarction 62 cases (62%), cerebral haemorrhage 30 cases (30%) and sub-arachnoid haemorrhage 8 cases (8%) out of 100 cases in total.

Correlation of gender with major categories of stroke was found statistically significant i.e. the correlation existed between the two variables. Out of 100 cases there were 44 cases of male gender and 56 cases of female gender. Amongst male gender, cerebra infarction was most common accounting for 31 cases (70.4% of all male gender cases) followed by intra cerebral bleed and sub-arachnoid haemorrhage accounting for 7 cases (16% of all male gender cases) and 6 cases (13.6% of all male gender cases) respectively.

Amongst the female gender intra cerebral bleed cases were most common, although not far more than those of cerebral infarction as in case of male gender. Intra-cerebral bleed accounted for 27 cases (48.2% of all female gender cases) followed by cerebral infarction, 26

cases (46.46 % of all female gender cases) and sub-arachnoid haemorrhage 3 cases (5.34% of all the female gender cases) respectively. In contrast to male gender pattern female gender had more cases of intra cerebral bleed but half the number of cases of sub-arachnoid haemorrhage and cerebral infarction. Correlation between various age groups and stroke categories was found to be statistically non significant i.e. no correlation existed between the two variables. Yet, peak age range for cerebral infarction noted was 51-60 year accounting for 19 cases (30.66% of all cases of cerebral infarction). Peak age range for intra cerebral bleed noted was 41-50 years accounting for 10 cases (33.66% of all cases of intra cerebral bleed). Similarly peak age range for sub-arachnoid haemorrhage was 41-50 years accounting for 5 cases (62.5% of all cases of sub-arachnoid haemorrhage).

Correlation between hypertensive status and stroke was also found to be statistically non significant i.e. no correlation existed between two variables. Yet, cerebral infarction was found to be more common in non

hypertensive patients accounting for 25 cases (43 % of all cases of cerebral infarction). Intra-cerebral bleed was found to be more common in patients who were hypertensive but took medication irregularly, accounting for 13 cases (42% of all cases of intra-cerebral bleed). Sub-arachnoid haemorrhage was found to be more common in non hypertensive patients accounting for 6 cases (55% of all cases of sub-arachnoid haemorrhage).

In the end, correlation between diabetic status of patients and various categories of stroke was also found to be non significant statistically i.e. no correlation existed between the two variables. Yet, cerebral infarction was found to be most common in diabetic patients accounting for 35 cases (56.5 % of all cases of cerebral infarction). Intra cerebral bleed was also found to be most common in non diabetic patients accounting for 21 cases (70 % of all the cases of intra cerebral bleed) sub-arachnoid haemorrhage was found to be present only in non diabetic patients accounting for 8 cases.

Table-I. Stroke in various age groups

Age group	Cerebral infarction		Intra cerebral bleed		Subarachnoid hemorrhage		Total
	No. pts	%age	No. pts	%age	No. pts	%age	
21-30	2	3.2	0	0	0	0	2
31-40	7	11.3	2	6.68	1	12.5	10
41-50	13	20.96	10	33.33	5	62.5	28
51-60	19	30.66	7	23.33	1	12.5	27
61-70	3	20.97	9	30	1	12.5	23
71-80	7	11.3	1	3.33	0	0	8
81-90	1	1.61	1	3.33	0	0	2s
Total	62	-	30	-	8	-	100

Chi- square calculated 11.39 Chi- square tabulated= 21.03

Gender	Cerebral infarction		Intra cerebral bleed		Subarachnoid hemorrhage		Total
	No. pts	%age	No. pts	%age	No. pts	%age	
Male	31	70.4	7	16	6	13.6	44
Female	26	46.46	27	48.2	3	5.34	56
Total	57		34				100

Chi- square calculated 12.85 Chi- square tabulated 5.99

Hypertension status	Cerebral infarction		Intra cerebral bleed		Subarachnoid hemorrhage		Total
	No. pts	%age	No. pts	%age	No. pts	%age	
On regular medication	17	29	8	26	3	27	28
On irregular medication	16	28	13	42	2	18	31
Non hypertensive	25	43	10	32	6	55	41
Total	58	-	31	-	11	-	100

Chi- square calculate = 2951 Chi- square tabulated = 9.49

Diabetes status	Cerebral infarction		Intra cerebral bleed		Subarachnoid hemorrhage		Total
	No. pts	%age	No. pts	%age	No. pts	%age	
On regular medication	9	14.5	2	6.67	0	0	11
On irregular meditation	18	29	7	23.3	0	0	25
Non diabetics	35	56.5	21	70	8	100	64
Total	62		30		8		100

Chi- square calculated = 6.89 Chi- square tabulated = 9.49

DISCUSSION

Present study revealed a trend towards more cases of intra cerebral bleed in stroke than those cited in western literature which is in agreement with what found out by Venketasubramanian who studied frequency distribution

of stroke in East Asian countries⁹, Wong et al who studied the same in cases admitted to hospital of various Asian countries including India, China, Malaysia, Indonesia, Thailand, Philippines, Singapore and Vietnam⁸, and Vohra who did a study on cases admitted

to various hospitals of Karachi, Pakistan⁷. Frequency of intracerebral bleed in present study was found out to be 1.3 times that showed by Wong et al⁸, 1.03 times that showed by Vohra⁷, and fell in the same range given by Venketasubramanian i.e. 22-39%⁹.

Nadeem et al⁴, and Ashraf and Sadaf¹⁰ showed a slightly higher trend as compared to Vohra⁷, Venketasubramanian and Wong et al⁸ who showed markedly higher trend for intra-cerebral bleed in cases of stroke. Results of present study revealed intra-cerebral bleed to be 2.5 times higher than that shown by Nadeem et al⁴ and 2 times more common compared to what found out by Ashraf and Sadaf¹⁰. Arshad et al found out that intra-cerebral bleed was more common in male gender¹¹ from which present study differed a lot. For male to female ratio given by Arshad et al i.e. 2:1, present study revealed 1:4, highlighting that intra-cerebral bleed was much more common in female than in male gender.

Mean age range for stroke in the present study was in agreement to those reported Vohra⁷, Venketasubramanian⁹ and Ashraf and Sadaf¹⁰.

Hypertension is most important risk factor for stroke and present study revealed 59 % of the cases to be hypertensive which is 0.95 times lower than what shown by Javed et al¹² and Wong et al⁸ but it was 1.2 times higher than what reported by Vohra⁷.

As another risk factor, present study revealed diabetes mellitus to be present in 36% of the cases which was 2 times higher than what found out by Vohra⁷, 1.7 times higher than what found out by Wong et al⁸ and 2.3 times higher than what reported by Javed et al¹².

Uncontrolled hypertension did have significant impact on higher trends of intra cerebral bleed that was found more commonly among female gender. A probable reason can be lack of awareness amongst the women-folk about management of hypertension as a life long therapy rather than day to day business which intern can be due to lack of education and social interaction.

So present study revealed a higher percentage of diabetic and hypertensive patients developing stroke. It could be due to difference in dietary habits and life styles etc., an area requiring further research as is the statistically significant higher trend of intra-cerebral bleed being more common in female gender and cerebral infarction being more common in male gender.

CONCLUSION

Intra-cerebral bleed has got a higher trend in Asia than in western countries and is more common in female gender while cerebral infarction is more common in males and its frequency although the highest among the major categories of stroke in Asia but relatively less as compared to that in western countries. Common habit of irregular medication for Hypertension has a significant impact regarding this trend while that for diabetes mellitus does not. More research work is needed to find out the risk factors for this marked variation in trends of stroke in Asians.

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