THE STUDY ON STROKE IN HIV PATIENTS

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ABSTRACT

BACKGROUND

Stroke and HIV infection are both common medical problems in day-to-day clinical practice. According to the few studies done[1] in India, the prevalence of stroke in general population in India is 205 cases/1 lakh population, common in elderly people and of them 25% are seen in the young individuals. HIV infection is an emerging aetiology for stroke in the young.

MATERIALS AND METHODS

This is a prospective, observational, hospital-based study involving 100 inpatients' who were admitted in medical and neurology wards with acute stroke with HIV infection to Government General Hospital, Kakinada, from October 2012 to September 2014. Before the commencement of the study, permission was obtained from Institutional Review Board, Ethics Committee, Rangaraya Medical College and GGH. All enrolled patients were informed about the nature of the study and their rights to refuse. Their informed written consent was taken before including them in the study.

RESULTS

In studies done by M. Mlay et al[2], Felicia C. Chow et al,[3] percentage of diabetes was 22.1% and 11.1%, respectively. Brown et al and Ovbiagle et al[4] showed that the use of Highly Active Antiretroviral Therapy (HAART) has been associated with several metabolic complications, which is a risk factor for cerebrovascular events. Myocardial infraction is the most frequent vascular event in HAART usage by causing hyperlipidaemias and premature atherosclerosis, Amelia Nogueria Pinto et al.[5] There were a total of 30 deaths altogether in the study (30% mortality) with 3 cases out of the 12% haemorrhagic strokes (27.27% mortality) and 27 deaths out of the 82% cases of ischaemic stroke (33.33% mortality). There is no statistically significant difference in the mortality rates between ischaemic and haemorrhagic strokes with a p value of 1.0.

CONCLUSION

HIV infection puts the patients at risk for cerebrovascular events is now an established association. Stroke is being reported more often as first presentation of HIV infection. Thus, it is worthwhile to screen for the HIV in routine workup for stroke in young and after confirmation of HIV infection workup should further proceed to establishing an aetiopathogenesis for stroke in HIV.

KEYWORDS

Stroke, HIV.

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BACKGROUND

Stroke and HIV infection are both common medical problems in day-to-day clinical practice. According to the few studies done[1] in India, the prevalence of stroke in general population in India is 205 cases/1 lakh population, common in elderly people and of them 25% are seen in the young individuals. HIV infection is an emerging aetiology for stroke in the young.

Neurological disease is the first manifestation of symptomatic HIV infection in 10% to 20% of persons and about 60% of patients with advanced HIV disease.

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HIV infection causes neurological manifestations in 55% to 90% of the cases in which 30% are asymptomatic, 35% having peripheral nerve involvement and remaining patients having cerebrovascular accidents, focal neurological deficits, seizures and meningitis.[6]

HIV was strongly associated with both ischaemic and haemorrhagic stroke. Several possible mechanisms have been hypothesised to account for stroke in association with HIV such as prothrombotic state[7] or a covert HIV-induced vasculopathy.

Various disorders that predispose the hypercoagulabe[8] state have been reported in HIV infection like antiphospholipid antibodies, lupus anticoagulant, deficiencies of protein C, protein S,[8,9] heparin cofactor II antithrombin, increased concentrations of von Willebrand factor and D-dimers. Increased platelet activation with respect to antiphospholipid antibodies and anticardiolipin antibodies have been observed in nearly 10% of HIV persons.

MATERIALS AND METHODS

This is a prospective, observational, hospital-based study involving 100 inpatients' who were admitted in medical and neurology wards with acute stroke with HIV infection to Government General Hospital, Kakinada, from October 2012 to September 2014. Before the commencement of the study, permission was obtained from Institutional Review Board, Ethics Committee, Rangaraya Medical College and GGH. All enrolled patients were informed about the nature of the study and their rights to refuse. Their informed written consent was taken before including them in the study.

Inclusion Criteria

- Hundred patients of stroke with HIV infection presenting first time were included in the study.

Exclusion Criteria

- Patients with head injury, intracranial space occupying lesion, cortical venous thrombosis.
- Patients age less than 14 years were excluded from the study.
- Patients with previous history of stroke were excluded from the study.
- Patients who refused to give informed consent were excluded from the study.

Data Collection

Patients were registered as a case of stroke with HIV only when they fulfilled the following criteria.

1. WHO criteria (modified) for stroke- A focal or global disturbance of cerebral functions persisting for more than 24 hours with no apparent cause other than vascular.
2. HIV confirmed by ELISA.
3. CT scan of head showing the evidence of stroke.

OBSERVATIONS AND RESULTS

The present study was carried out in 100 consecutive stroke with HIV patients admitted to Government General Hospital, Kakinada.

Sex Distribution

Sex	Number of Cases	Percentage
Males	56	56%
Females	44	44%
Total	**100**	**100%**

Table 1. Showing Distribution of Stroke in HIV between Male and Female

In our study group, 56% (n=100) of patients were males and 44% were female, male-to-female ratio was 1:3:1 and the mean age for stroke was 39.29 + 1.97 years and showed males were more effected.

Age	Total	Male	Female
11-20	1	1	0
21-30	26	17	9
31-40	30	16	14
41-50	24	14	10
51-60	13	6	7
61-70	6	2	4

Table 2. Age Distribution

In our study, 26% patients were in between the age of 21-30 years age group, 30% of the patients were in between the age of 31-40 years age group, 24% of the patients were in between the age of 41-50 years age group.

56% (n=100) of the patients were in between the age of 21-40 years age group and showed stroke is common in young age group with a mean age 39.29 ± 10.97 (SD).

Risk Factors	Total	Male	Female
Alcohol	60	49	11
Smoking	57	51	11
Drug addition	5	4	1
Married multipartners HIV status	90	50	40

Table 3. Showing Traditional Risk Factors

1. In our study, 60% (n=100) patients consume alcohol in which males were 66%.
2. 57% (n=100) 57% habituated to smoking in which males were 89%.
3. 5% (n=100) patients were drug abusers in which males were 80%.
4. 90% (n=100) patients were married and had multipartner high behaviour in which 55.55% were males, this study showed that males had high traditional risk factors.

	Total	Male	Female
Hypertension	30	17	13
Diabetes	31	20	11
Heart disease	5	2	3
HAART	41	19	22
ATT	28	18	10
Dyslipidaemia	6	1	5
Hypercoagulable state	2	2	2

Table 4. Showing Specific Risk Factors for Stroke in HIV

1. In our study, 30% of the patients had hypertension in which 56% were males.
2. 31% of the patients had diabetes in which 64.51% were males.
3. 5% had heart diseases in which 60% were females.
4. 41% (n=100) were using HAART in which 53.65% females.
5. 28% (n=100) were using ATT in which 64.28% were male patients.
6. 6% (n=100) had dyslipidaemia in which 66.66% were females.
7. 2% (n=100) had hypercoagulable state in which all were males.

The show that most of the patients 60% had high-risk factors for stroke.

Types	Total	Male	Female
Ischaemic	82	46	36
Haemorrhagic	18	10	8
Total	**100**	**56**	**44**

Table 5. Showing Ischaemic vs. Haemorrhagic Stroke

1. In our study, 82% (n=100) patients had ischaemic stroke in which 56.09% were males.
2. 18% (n=100) patients had haemorrhagic stroke in which 55.55% were male patients.

This show that ischaemic stress were more common than haemorrhagic.

Opportunistic Infection	Total	Male	Female
Toxo	7	5	2
Cryptococcus	3	0	3
HCV	3	1	2
HBsAg	6	4	2
TBM	18	14	4

Table 6. Showing Incidence of Opportunistic Infections

1. In our study, 18% (n=100) had TBM in which 77.77% were males.
2. 7% had toxoplasmosis in which 71% were males.
3. 3% had cryptococcus in which all were females.
4. 3% (n=100) had HCV in which two were females and one male.
5. 6% (n=100) had HbsAg in which four were male patients and remaining were females.

This show that severity of HIV infection with low CD4 count had a high opportunities infections.

	Total	Male	Female
CD4 below 200	48	28	20
CD4 201-300	44	25	19
CD4 above 300	8	3	5

Table 7. Showing Stroke Incidence Related to CD4 Count

In the present study, 48% (n=100) of the patients had CD4 count less than 200 cell/cu mm, 44% had CD4 in between 201-300 cells/cu mm and 8% of the patients had more than 300 cell/cu mm.

Most of the patients had low CD4 count. This shows that underlining severity of HIV infection.

	Total	Death	Male	Female
Glasgow 1-3	17	17	10	7
Glasgow 4-7	28	8	3	5
Glasgow 8-15	55	5	2	3

Table 8. Showing Outcome of Patients in Relation to Glasgow Coma Scale

In the present study, 30% (n=100) of death occurred. 50% of the patients were died when the Glasgow coma scale was less than 3 at the time of admission.

This shows that Glasgow coma scale with a low score at the time of admission is a good predictor for outcome.

Age	Total	Male	Female
20-40	52	31	21
41-50	19	12	7
51-60	9	3	6
Above 60	2	0	2

Table 9. Ischaemic Stroke in Relation to Age Group

1. In the present study, (n=100) 82% of the patients had ischaemic stroke in which 56.09% were male patients.
2. 63.41% (n=100) patients had stroke in the age group between 20-40 years of age. This showed that ischaemic stroke were seen in the younger in these patients.

Age	Total	Male	Female
20-30	5	3	2
31-40	3	1	2
41-50	12	5	7
51-60	6	4	2
51-70	4	2	2

Table 10. Death in Relation to Age Group

1. In our study, 30% (n=100) patients died in which 50% were males.
2. 60% deaths occurred in the age group between 31-50 years. This showed that the mortality was seen in younger age group.

DISCUSSION

In the present study, 100 patients admitted with stroke with HIV were studied.

Age

In the present study, the mean age of stroke in HIV patients was 39.29 ± 10.97 (S.D.) years.

In a study conducted by Synrem Evangelyne et al[10] and G. Arvind et al[10] in India reported that the mean age was 39.47 years in patients with stroke with HIV.

Ovbiagele et al[11] and Nath et al[11] reported that the mean age for stroke HIV patients was 42.9 years (1997) and 48.4 years (2006), respectively. In a study by Ortiz et al,[12] mean age for stroke is 42 years (1997-2002). JJ Kumwenda et al[13] reported that mean age was 38 years for stroke in HIV patients.

The early presentation of stroke in HIV maybe due to high-risk behaviour in young age.

In the present study, the mean age in female patients was 37.45 ± 10.68, whereas mean age in male patients was 39.47 ± 11.01, which was not statistically significant (p=0.0575).

Gender

In the present study, 56% were male patients and remaining 44% were females. This shows that men with HIV were most affected with stroke than women with HIV with male-to-female ratio of 1:3:1. This finding of male predominance was comparable with other studies.

Hypertension

E. Zijlstra et al[13] showed hypertension was associated with an increase in the incidence of stroke in HIV patients.

Diabetes

In the present study, 31% (n=100) of the patients were suffering with diabetes. Males were 20 in number and females were 11 in number, this figure correlates with many of the other studies.

Mortality among diabetes was 51%, so diabetes has poor outcome (p value 0.0069).

In studies done by M. Mlay et al[2], Felicia C. Chow et al,[3] percentage of diabetes was 22.1% and 11.1%, respectively.

Brown et al and Ovbiagle et al[4] showed that the use of Highly Active Antiretroviral Therapy (HAART) has been associated with several metabolic complications, which is a risk factor for cerebrovascular events.

Myocardial infraction is the most frequent vascular event in HAART usage by causing hyperlipidaemias and premature atherosclerosis, Amelia Nogueria Pinto et al.[5]

There were a total of 30 deaths altogether in the study (30% mortality) with 3 cases out of the 12% haemorrhagic strokes (27.27% mortality) and 27 deaths out of the 82% cases of ischaemic stroke (33.33% mortality). There is no statistically significant difference in the mortality rates between ischaemic and haemorrhagic strokes with a p value of 1.0.

Study	Percentage
M. Mlay et al[2]	28.9%
Pinto et al[5]	39%
Present study	30%

Table 11. Showing Mortality

CONCLUSION

HIV infection puts the patients at risk for cerebrovascular events is now an established association. Stroke is being reported more often as first presentation of HIV infection. Thus, it is worthwhile to screen for the HIV in routine workup for stroke in young and after confirmation of HIV infection workup should further proceed to establishing an aetiopathogenesis for stroke in HIV.

Large population-based age and sex matched and outcome studies are needed to strengthen the aetiological association as well as throw light on grey areas like impact of ART on HIV associated stroke and uses of antiplatelets.

The most common presenting age of the patients is in between 30-40 years, which indicates high-risk behaviour of the young people. Sex education regarding HIV transmission, progression and complication of the disease must be given high priority.

HIV patients should be monitored regularly and HAART therapy should be started as early as possible depending on the necessity according to the guidelines to avoid complications of HIV infection.

Those who present with stroke must be provided given intensive care to reduce the mortality. Low CD4 count less than 200 cell/cu mm is a major risk factor for stroke in the present study in both sexes.

Prevention is better than cure. Every care should be taken to diagnose and treat opportunistic infection, which are the major cause of the stroke.

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