

## Original Research Article

## Prospective Study of Renal Impairment in Stroke Patients

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**Abstract**

**Introduction** Renal impairment is commonly seen in stroke patients. more common in hemorrhagic strokes. In stroke patient renal impairment is transient so required renal replacement therapy is rarely. e-GFR decreased <40mL/min the risk of symptomatic stroke in the general population more 3.1 times. **Aim & Objective:** Study of renal impairment in stroke patients. To compare the renal impairment between hemorrhagic and ischemic stroke. **Methodology:** The study comprised 100 patients admitted in Department of Medicine, J.A. Group of Hospitals. A detailed clinical history and physical examination will be done and findings will be recorded. Renal function testing was performed in hospitalized stroke patient. Serum urea and creatinine were evaluated on alternate days throughout their hospital stay, and the e-GFR was calculated. **Results:** All participants were having normal Renal USG. Low eGFR < 60mL/minute per 1/73m<sup>2</sup> was found significantly higher in CVA Hemorrhage 25 (75.8%) in comparison to CVA Infract 23 (34.3%). Outcome was statistically insignificant between CVA Hemorrhage (6%) and CVA Infract (3%) group. **Conclusion:** Decrease eGFR < 60mL/minute per 1/73m<sup>2</sup> was found in 48 participants out of 100 participants significantly higher in CVA Hemorrhage 25 (75.8%) in comparison to CVA Infract 23 (34.3%) (**p value <0.001**).

**Keywords:** renal,stroke

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**Introduction**

Stroke is the second leading cause of death worldwide and third leading cause of disability. stroke is grown incidence worldwide It is a major cause of morbidity, mortality. Patients with reduced renal function are at high risk for the subsequent development of Cardio vascular disease including stroke [1-3].

e-GFR decreased <40mL/min the risk of symptomatic stroke in the general population more 3.1 times<sup>[4]</sup>. Stroke itself has a high morbidity and mortality, and additionally, renal dysfunction is an independent predictor of poor clinical outcome<sup>[5,6]</sup>. Mild stages of CKD increase the risk of future ischemic and hemorrhagic strokes<sup>[7]</sup>.

**Aims and Objective**

Study of renal impairment in stroke patients

To compare the renal impairment between hemorrhagic and ischemic stroke.

**Material and Methods**

Study Place: JAH & KRH and Department of Medicine and Neurology department . Duration of study: January 2021 to August 2022. Study design: Hospital based observational study

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**Sample size**

The study comprised 100 patients admitted in Department of Medicine, J.A. Group of Hospitals.

**Sample size calculated by the formula**

$$n = \frac{Z_{\alpha/2} \times PQ}{D^2} = \frac{(1.96)^2 \times 48 \times 52}{(10)^2}$$

Where  $Z_{\alpha/2} = 1.96$ ,  $P = 48$ ,  $Q = 52$ ,  $D = 10$   
 $n = 96 \sim 100$

**Inclusion Criteria**

- Age more than 18 years.
- Hemorrhagic and ischemic stroke

**Exclusion Criteria**

- Age less than 18 years.
- Cases of CKD
- Subjects who do not provide consent for the study.
- H/o renal disease
- Nephrotoxic drug used
- Septicemia

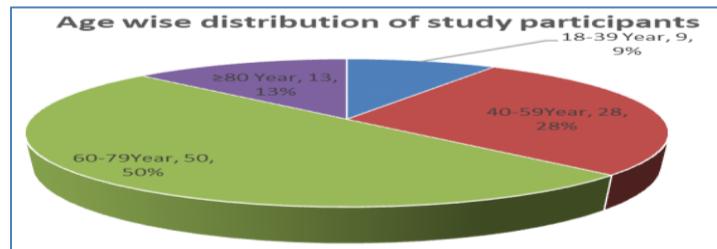
**Method of Collection of Data**

In all cases written informed consent will be obtained from each subject.

A detailed clinical history and physical examination will be done and findings will be recorded. Renal function testing was performed in hospitalized stroke patient. Serum urea and creatinine were evaluated on alternate days throughout their hospital stay, and the e-GFR was calculated as per the CKD -EPI creatinine equation : e-GFR (mL/minute per 1.732m<sup>2</sup>) = 142 X [serum creatinine] - 1.154 X age -

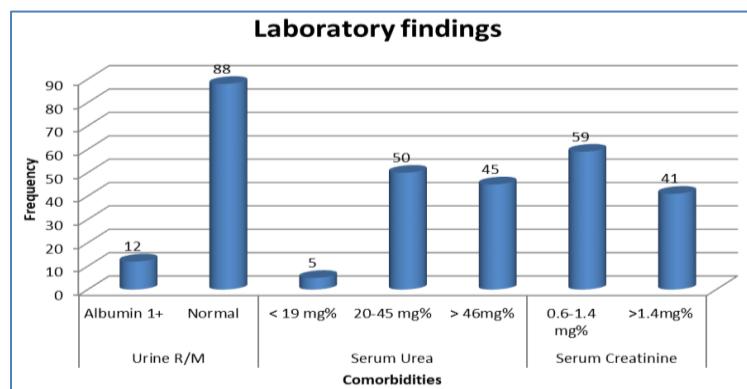
.203 X [.742 if female] X [1.21 if of African descent]. All the patients in the study will be subjected do the biochemical tests like liver function test, renal function tests, Serum electrolyte to confirm the presence of renal dysfunction in patients of stroke.

## Results



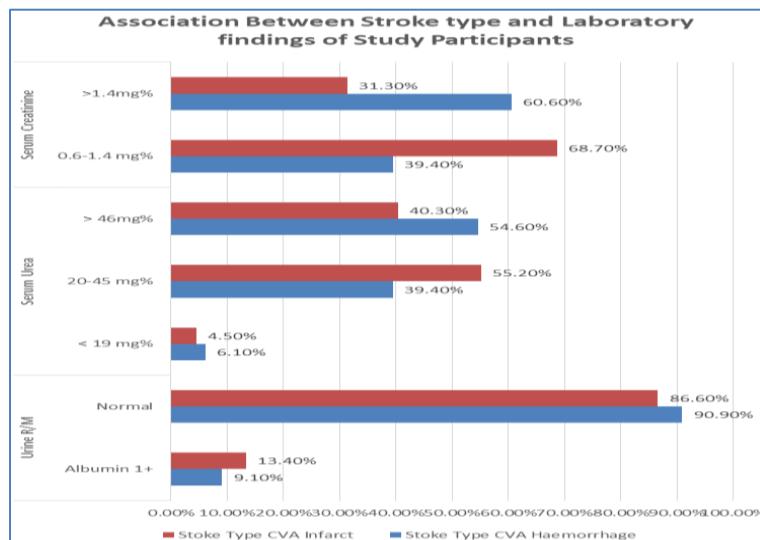
In present study 8.1% of participants were 18-39 years of age, 28 % belongs to age 60-79 year of age group, 50% of study participant were

belongs to age 60-79 year of age group and 13% study participants were belongs to equal and more than 80 year of age.



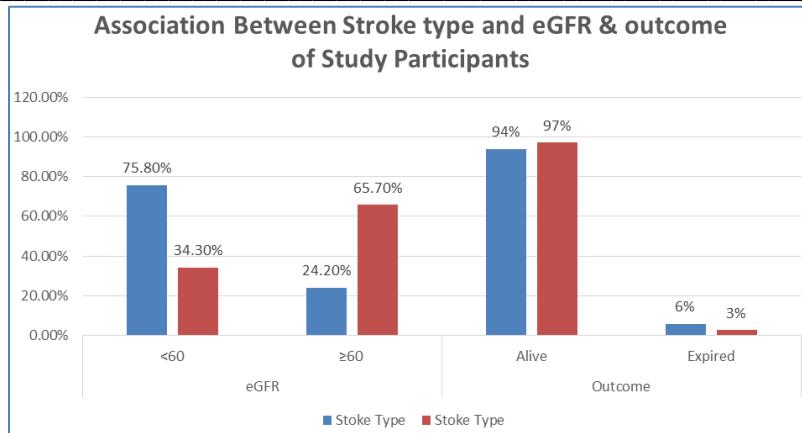
Only 12 participants were reported albumin +1 in routine microscopy, 45 participants were reported raised serum urea level and 41 study

participants were presented with raised serum creatinine level.



Urine albumin was higher in CVA infarct (13.4%) group in comparison to CVA hemorrhage group (9.1%) however, this difference was statistically insignificant. Similarly, Serum urea was

statistically insignificant between group only serum creatinine was significantly higher in CVA hemorrhage group (60.6%) in comparison to CVA infarct hemorrhage (31.3%).



Low eGFR was found significantly higher in CVA Hemorrhage (75.8%) in comparison to CVA Infarct (34.3%). Outcome was

statistically insignificant between CVA Hemorrhage (6%) and CVA Infarct (3%) group.

**Table 1:** Association Between stroke type and Gender of Study Participants

Gender	Stroke Type		Total	P Value
	CVA Hemorrhage	CVA Infarct		
	N (%)	N (%)		
Female	13 (39.4%)	24 (35.8%)	37 (37%)	0.728
Male	20 (60.6%)	43 (64.2%)	63 (63%)	
Total	33 (100%)	67 (100%)	100 (100%)	

Female were having higher CVA Hemorrhage (39.4%) and male were having higher CVA infarct (64.2), however the difference was statistically insignificant.

#### Discussion

- Higher incidence of stroke was seen in patients from 60-79 years age group 50 %, almost equal distribution of participants was found in CVA hemorrhage and infarct group in each group. statically difference was not observed in between on the basis of the age. (p value 0.665).
- B. Fure et al 2006 studied 164 patients with mean age 69.8 years (range 30.1 -91.9SD 11.2).
- High blood pressure was found significantly higher in CVA Hemorrhage group (84.8%) in comparison to CVA infarct (58.2%) group. (p value 0.008).
- Apak et al 2005 studied 62 patients and reported hypertension in 48 patients (77%).
- Mellitus. Proportion of Blood Sugar was also found almost similar in CVA Hemorrhage and CVA infarct group. it is statistically insignificant ( p value <0.05)
- Apak et al 2005 studied 62 patients and found 14(22%) patients of diabetes according to demographic and clinical features.
- Low eGFR <60mL/minute per 1.73m<sup>2</sup> was found significantly higher in CVA Hemorrhage 25 (75.8%) in comparison to CVA Infarct 23 (34.3%). (p value <0.001)
- Decrease e GFR< 60mL/minute per 1.73m<sup>2</sup> was found in 48 participants out of 100 participants. Low eGFR< 60mL/minute per 1.73m<sup>2</sup> was found significantly higher in CVA Hemorrhage 25 (75.8%) in comparison to CVA Infarct 23 (34.3%).
- Ovbiagele et al. have reported renal impairment in nearly a third of patients with ICH.

#### Conclusion

- Renal impairment is more common in the hemorrhagic stroke, then ischemic stroke. (p value <0.001).

- Most of the patient Renal impairment is transient and not requires renal replacement therapy.
- High blood pressure was found significantly higher in CVA Hemorrhage group (84.8%) in comparison to CVA infarct (58.2%) group (p value 0.007).

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**Conflict of Interest:** Nil **Source of support:** Nil