

**Original article:**

## Study of serum fibrinogen level in ischemic stroke in elderly patients

<sup>1</sup>Dr Harsh Tak , <sup>2</sup>Dr Ravi Kumar Bansal , <sup>3</sup>Dr Khushboo Agarwal

<sup>1</sup>Assistant Professor, J L N Medical College , Ajmer , Rajasthan

<sup>2,3</sup>Senior Resident, J L N Medical College Ajmer , Rajasthan

Corresponding Author - Dr Ravi Kumar Bansal

### Abstract

**Introduction:** Stroke is a clinical syndrome which is defined as “abrupt onset of focal neurological deficit that is attributable to a focal vascular cause<sup>1</sup>” with symptoms lasting for 24 hours or longer. . It makes an important contribution to morbidity mortality and disability in developed as well as developing countries, prevalence rate in India is about 1.54 per thousand and the death rate 0.6 per 1000.

**Materials and methods:** The present study was conducted in the Department of Medicine, J.L.N. Medical College Ajmer. A total of 60 subject of elderly (>60 years) groups are both sexes were enrolled for this study. There were grouped as follows - 40 patients admitted to JLN Hospital, Ajmer with acute stroke syndrome (ischemic) as per WHO criteria i.e., “rapid onset of clinical signs of focal or global disturbance of cerebral function lasting for more than 24 hours or leading to death with no apparent cause other than the vascular lesion”.

Results : Their mean values were 401.8 and 277.5, and the standard deviation were 125.7 and 85.67. In age group >70 years there were 12 patients, out of them 8 were cases and 4 were control. Their mean values were 446.8 and 311.25, and the standard deviation were 71.5 and 43.27. In 40 cases mean were 410.8 and the standard deviation 114.86. While in 20 controls , mean was 284.25 and the standard deviation was 77.19. There was significant difference in plasma fibrinogen level between case and control, the relationship was statistically significant p value was <0.001.

**Conclusion:** Our study shows increase in mean plasma fibrinogen level with age.

### Introduction:

Stroke is a clinical syndrome which is defined as “abrupt onset of focal neurological deficit that is attributable to a focal vascular cause<sup>1</sup>” with symptoms lasting for 24 hours or longer. . It makes an important contribution to morbidity mortality and disability in developed as well as developing countries, prevalence rate in India is about 1.54 per thousand and the death rate 0.6 per 1000<sup>2</sup>. Risk factor for stroke includes diabetes, hypertension, smoking and hyperlipidemia and these have been linked to abnormalities of haemorheology and coagulation such as increased fibrinogen<sup>3,4</sup>. Epidemiological observations indicate that high plasma fibrinogen levels strongly correlate with two major thrombotic complications of atherosclerosis stroke and myocardial infarction. Thrombosis is increasingly recognized as a central mechanism in stroke as well as in myocardial infarction. Fibrinogen is involved in events thought to play a major role in thrombosis<sup>5</sup>. Fibrinogen is a soluble plasma glycoprotein that consists of three non - identical pairs of polypeptide chains (A $\alpha$ , B $\beta$  and  $\gamma$  chains)<sup>6</sup>.

**Materials and methods:**

The present study was conducted in the Department of Medicine, J.L.N. Medical College Ajmer. A total of 60 subject of elderly (>60 years) groups are both sexes were enrolled for this study. There were grouped as follows:

**Group I (Cases):** 40 patients admitted to JLN Hospital, Ajmer with acute stroke syndrome (ischemic) as per WHO criteria i.e., “rapid onset of clinical signs of focal or global disturbance of cerebral function lasting for more than 24 hours or leading to death with no apparent cause other than the vascular lesion”.

**Group II (Controls):** 20 subjects who had never suffered from this stroke were selected as control subject.

**Exclusion criteria:**

Following exclusion criteria applied to both the study groups

- 1) Patient with absent peripheral pulses
- 2) Women on oral contraceptive pill
- 3) Moderate and severe alcoholism
- 4) Pregnancy and puerperium
- 5) Myocardial infarction or surgery with in the previous 3 months

All patients and controls were subjected to a protocol (as per proforma) which included a detailed clinical history and relevant examination.

All the patients were subjected to the following baseline investigations:

Routine Investigations

- (1) Complete haemogram including haemoglobin, total leucocyte count, differential leucocyte count, ESR and haematocrit.
- (2) Urine analysis
- (3) Blood sugar
- (4) Serum bilirubin
- (5) Serum urea and creatinine
- (6) Serum lipids
- (7) X-Ray chest
- (8) PT/PTTK
- (9) 12 lead electrocardiogram

Special Investigation:

- (1) CT Scan of head.
- (2) Plasma fibrinogen levels on day of admission.

**Observation**

**Table 1: Distribution of patients (case) according to age**

Age groups	NO. of patients	Male	Female
61-70	32	22	10
>70	8	8	0
<b>Total</b>	40	30	10

In the age group 61 to 70 years, there were 32 cases. Among them 22 were male & 10 were female. In the age group >71 years, there were 8 cases & all were male.

**Table 2: Distribution of patients (control) according to age**

Age groups	No. of patients	Male	Female
61-70	12	7	5
>70	8	5	3
<b>Total</b>	20	12	8

In the group 61 to 70 years, there were 12 control. Among them 7 were male and 5 were female. In the age group >70 years there were 5 male and 3 female.

**Table 3 : Sex distribution**

Sex	No. of case	NO. of control
Male	30	12
Female	10	08

Among the cases 40 patients, 30 of the patients were male and 10 were female.

Among the controls 20 patients, 12 of the patients were male and 8 were female.

**Table 4 : Age and Mean of Plasma Fibrinogen level**

Age groups (years)	CASE		CONTROL	
	No. of case	Mean ± S.D	No. of control	Mean ± S.D
61-70	32	401.8±125.7	16	277.5±85.67
>70	8	446.8±71.5	4	311.25±43.27
<b>Total</b>	40	410.8±114.86	20	284.25±77.19
P value<0.001				

This table shows that, In age group 61 to 70 years there were 48 patients, out of them 32 were cases and 16 were controls. Their mean values were 401.8 and 277.5, and the standard deviation were 125.7 and 85.67. In age group >70 years there were 12 patients, out of them 8 were cases and 4 were control. Their mean values were 446.8 and 311.25, and the standard deviation were 71.5 and 43.27. In 40 cases mean were 410.8 and the standard deviation 114.86. While in 20 controls, mean was 284.25 and the standard deviation was 77.19. There was significant difference in plasma fibrinogen level between case and control, the relationship was statistically significant p value was <0.001.

**Discussion:**

The present study involved 60 patients out of which 40 were case and 20 were controls. The age of patients were more than 60 years. In the age group 61 to 70 years, there were 32 cases. Among them 22 were male & 10 were female. In the age group >71 years, there were 8 cases & all were male. There was significant difference in mean plasma fibrinogen level between different age group in both case and control, the relationship between age and plasma fibrinogen level was statistically significant their p value was <0.001.

**Conclusion:**

Our study shows increase in mean plasma fibrinogen level with age. AJ lee<sup>7</sup> and TW Maede<sup>8</sup> have shown that fibrinogen level increases with age. This study also demonstrates an increasing trend of fibrinogen with age.

**Bibliography:**

1. Harrison's Principles of internal medicine 18th edition, p. 3270.
2. ICMR-2004 Assessment of burden of Non communicable disease.
3. Mario di Napoli and puneet singh. Is Plasma fibrinogen useful in evaluating ischemic stroke patients 2009; 1549-1552.
4. Mistry P, Chawla KP, Rai HP, Jaiswal P. Plasma fibrinogen levels in stroke. J Postgrad Med 1990; 36:1-4.
5. Diminno G, Mancini M. Measuring plasma fibrinogen to predict stroke and myocardial infarction. Arteriosclerosis 1990; 10:1-7.
6. Harpers Illustrated biochemistry 28 edition chapter 51.
7. Stephenj. Mcphee, Maxinee Current medical and diagnosis and treatment. 2012; p. 1664.

8. Lee AJ, Lowe GD, Woodward M, Pedoe TH. Fibrinogen in relation to personal history of prevalent hypertension, diabetes, stroke, intermittent claudication, coronary heart disease and family history. The Scottish Heart Health study. *Br Heart J* 1993; 69:338-342.
9. Meade TW, Chakrabarti R, Haines AP, North WR, Stirling Y. Characteristics affecting fibrinolytic activity and plasma fibrinogen concentration. *BMJ* 1979; 1: 153-56