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STUDY OF ANAEMIA AS AN INDIVIDUAL RISK FACTOR IN CVA: ISCHEMIC STROKE

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ABSTRACT: To identify anaemia as an individual risk factor in CVA patients, in rural population, Chidambaram. In our study a total of 50 patients were identified in a 3 month non-invasive prospective observational study. The risk factors such as anaemia, diabetes, hypertension, smoking and alcohol consumption, were compared. In our study out of 41 males and 9 females the incidence rate of anaemia was found to be more in males than females. Microcytic Hypochromic anaemia and Dimorphic anaemia are the common types of anaemia identified. The stroke incidence rate was found to be more in hypertensive patients, secondary to anaemia and equal in both alcoholic and non-alcoholic patients. Anaemia was found to be the most common risk factor for stroke followed by hypertension in rural population.
KEYWORDS: CVA, Anaemia, Hypertension, Diabetes Mellitus.

INTRODUCTION: Anaemia is condition where there is decreased haemoglobin level or amount of RBCs in the blood, which can also be defined as lowered oxygen carrying capacity of blood.[1-3] Stroke, also called as CVA, brain attack or CVI results in cell death due to the poor blood supply to the brain. Ischemic stroke and Haemorrhagic stroke are the two main types of stroke which occurs due to the lack of blood supply and bleeding resulting in the impaired brain function.[4] Cerebrovascular accidents and cardio vascular diseases are highly related to most common blood disorder anaemia.[5-9] High blood pressure and atrial fibrillation are the important modifiable risk factors of stroke.[10-11] Diabetes mellitus, high blood cholesterol, Smoking,[12-13] alcohol consumption[14], processed red meat, lack of physical activity, obesity,[15] and unhealthy diet,[16] drug use,[17] are the other modifiable risk factors. Emotionally, Physically and mentally or in the combination of three people are affected by stroke and depending upon place of lesion and size the results vary widely.[18]

The dysfunctioning of the organs occurs based on the areas affected in the brain i.e., muscle weakness, pressure sores, incontinence, difficulty in carrying out daily activities, speech loss, numbness, appetite loss, pneumonia, apraxia (inability to perform learned movements), and pain are the disabilities of stroke that occur commonly. Death or coma occurs when parts of brain stem are affected, or in the severe stroke.[19] Our main aim is to identify anaemia as an individual risk factor in CVA patients.

MATERIAL AND METHODS: This is a non-invasive prospective observational study conducted in Rajah Muthiah Medical College Hospital, Chidambaram a Rural serving Medical Centre. This study was conducted in the time period of 3 months (Jan. 2015 to March 2015). Patients who were diagnosed with Cerebrovascular accident were included. Patients with age group 18-80 years, co-morbidities like type II diabetes, hypertension, dyslipidaemia were included, diagnosed with only ischemic stroke were included. Patients with chronic kidney disease, Patients on treatment for anaemia (any cause), Pregnancy, malignancy were excluded.
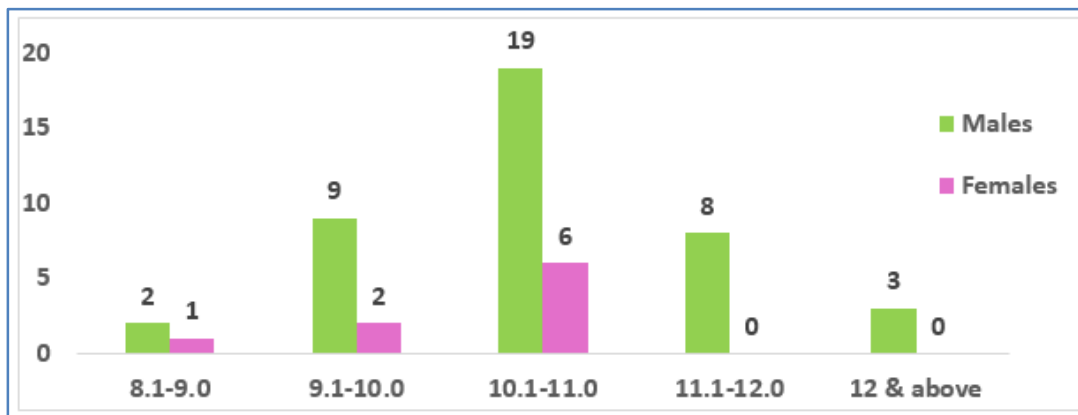
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In this study diagnosis of CVA was established by clinical history, examination confirmation was done by CT-Scan Brain. Investigations were done to establish other co-morbidities and risk factors. Haemoglobin was estimated by Sahli's haemoglobinometer. WHO's criterion for anaemia in adults is an Hb value of less than 12.5g/dl. Normal reference range of haemoglobin in males is 14.0-17.5g/dl and for females it is 12.3-15.3g/dl. Peripheral smear study was done to establish the nature of anaemia.

RESULTS: In a total of 50 patients enrolled in the study males constituted about 82% of total sample population when compared with females constituting 18%. The age range of the total population was 40 years to above 80years. Patients were further classified into 5 age groups out of which majority of CVA patients were found at the age group of 61-70 years, followed by 51-60 years (Depicted in the table–1). Comparison of the risk factors like alcohol consumption, smoking, diabetes and hypertension in study group majority of patients are non-diabetic, hypertensives, smokers and equal amounts of alcoholics and non-alcoholics. In this study group out of 41 males and 9 females, 38 males and total 9 females were anaemic. In case of types of anaemia, 22 patients were found to have Microcytic hypochromic anaemia and 18 patients are having dimorphic anaemia.

		No. of Patients	Percentage
Gender	Male	41	82%
	Female	9	18%
	Total	50	
Age in years	40-50	8	16%
	51-60	15	30%
	61-70	16	32%
	71-80	10	20%
	80 and above	1	2%
	Total	**50**	
Table 1: Demographic Characteristics			

Fig. 1: Distribution of Patients Based on Haemoglobin Level.

Fig. 1

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	No. of Patients	Percentage
Alcoholic	25	50%
Non-Alcoholic	25	50%
Total	**50**	
Smoking	24	48%
Non-smoking	26	52%
Total	**50**	
Diabetic	19	38%
Non-Diabetic	31	62%
Total	**50**	
Hypertensive	29	58%
Non-hypertensive	21	42%
Total	**50**	
Table 2: Distribution Based on Risk Factors		

Fig. 2: Distribution Based on Type of Anaemia.
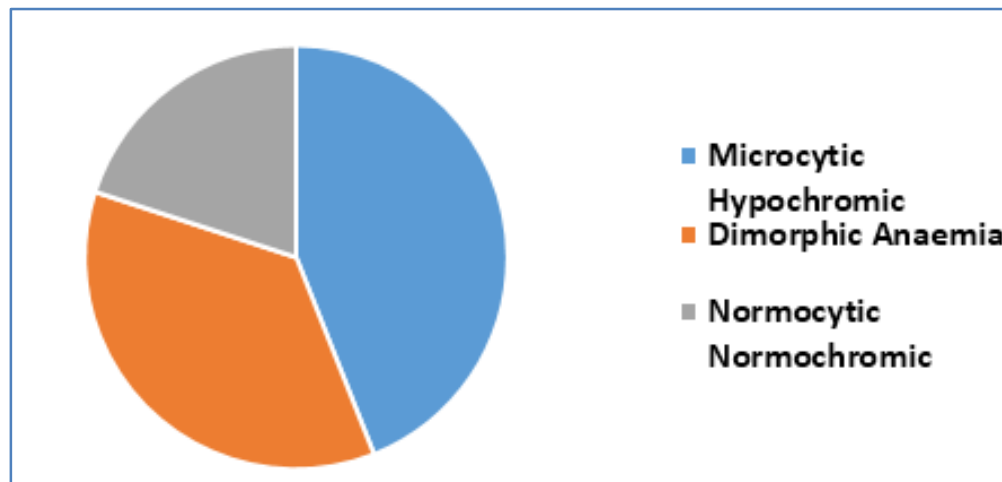
Fig. 2

DISCUSSION: In this study out of 50 patients diagnosed with CVA, 41 were male and 9 were female patients. The patients with the age group of 61-70 (32%) were more with risk of CVA followed by 51-60 years (30%) and 71-80 years (20%). Out of these 41 males and 9 females, males seems to be anaemic, however 100% of females were found to be anaemic. The incidence was more in patients with haemoglobin value ranging between 8.1-11.0g/dl. Earlier studies also reported that anaemia was a major risk factor for CVA and most of the patients affected were women.[5-7],[20] The patients affected with stroke were found to be same in both alcoholics and non-alcoholics. In this study conducted on 50 patients the stroke incidence was high in non-diabetic and hypertensive patients. Out of these 22 patients were identified with Microcytic Hypochromic anaemia, 18 with Dimorphic anaemia and 10 followed by Normocytic Normochromic anaemia.

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CONCLUSION:
1. In our study all the patients were found to have low haemoglobin levels who were diagnosed with CVA.
2. Microcytic Hypochromic and Dimorphic Anaemia are the common types of anaemia identified.
3. Hence there is significant role of haemoglobin in development of CVA in India in rural population, considered as an individual risk factor for CVA.

LIMITATIONS: Number of patients in study group is limited. Secondary cause for anaemia was not established. Further elaborate study has to be done with a larger study population and more elaborate study to identify the cause for anaemia.

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