Study of Metabolic Syndrome in Acute Stroke

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Introduction

Stroke (cerebrovascular accident) is the first cause of adult neurological disability in developing Countries.The presence of metabolic syndrome has been associated with an increased risk of stroke.

Metabolic syndrome is a constellation of cardiometabolic risk factors (hypertension, diabetes, dyslipidaemia, central

obesity). Thus Studying metabolic syndrome among the acute stroke patients will help to assess the risk of recurrent stroke and improve the quality of life of stroke patients.

Aims and Objectives

The aim of this study is to assess metabolic syndrome in acute stroke survivors.

Objectives

- Compare the prevalance of metabolic syndrome between ischaemic and haemorrhagic strokes.
- Compare metabolic syndrome between male and female stroke survivors
- Compare prevalence or frequencies of components of metabolic syndrome between ischaemic and haemorrhagic strokes.
- Determine the association between metabolic syndrome and stroke.

Materials and Methods

Study Area: Department of medicine , Maharajahs Institute of Medical Sciences (MIMS), Nellimarla, Viziangaram.

Study Population: The study was performed in MIMS amongst patients admitted to various medical wards and intensive care unit.

Study Period: 12 months (June 2018 to May 2019).

Sample Size: 150 patients.

Inclusion Criteria

- Stroke diagnosed by CT or MRI scan.
- Patient with at least one stroke episode.
- Stroke with hemiplegia or hemiparesis.

- Stroke duration of less than 2 weeks

Exclusion Criteria

- Stroke as a result of primary or metastatic neoplasm , post seizures paralysis and head trauma.

- Stroke patients who were unconscious.
- Stroke duration of more than 2 weeks

Results and Analysis

Characteristics of Study Population

General characteristics	Ischaemic stroke	Haemorrhagic stroke
Male (n%)	43(28.7)	27(18)
Female (n%)	52(34.7)	28(18.6)
Age (years)	58±13	56±13
Duration of stroke	1.84±0.88	2.74±1.68
Stroke types n (%)	95(63.3)	55(36.7)
Side of body affected		
Right	52(34.6)	43(28.7)
left	30(20.0)	25(16.7)
Ambulation	35(23.3)	60(40)
Non ambulant	15(10)	40(26.7)
ambulant		

Anthropometric variables	Ischaemic stroke ((mean±SD)	Haemorrhagic stroke (mean±SD)	P-value
Height (m)	1.6±0.1	1.7±0.1	0.793
Weight (kg)	7.91±7.8	77.5±6.3	0.209
BMI	30.1±3.8	27.6±3.1	0.065
SBP(mm Hg)	145±22.1	153.5±19.7	0.552
DBP(mm Hg)	91.4±17.4	90.2±16.9	0.702
Waist circumference(cm)	106.9±7.8	103.8±7.8	0.637

Number of MetS Indicators	Ischaemic Stroke n(%)	Haemorrhagic Stroke n(%)	p-value
0	2(1.3%)	1(0.7%)	0.9625
1	10(6.7%)	12(8%)	0.9077
2	25(16.7%)	10(6.6%)	0.4596
>/=3	65(43.3%)	25(16.7%)	0.0185
TOTAL	102 (68%)	48(32%)	0.0005
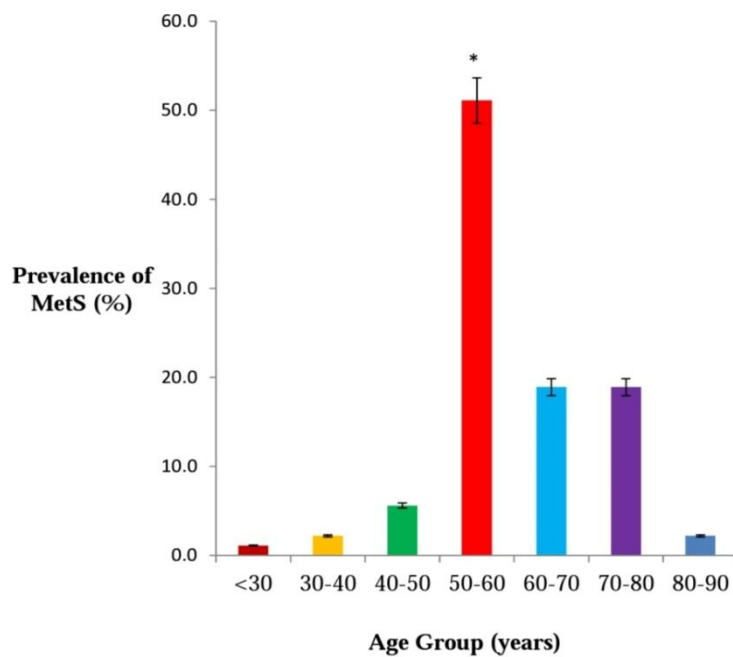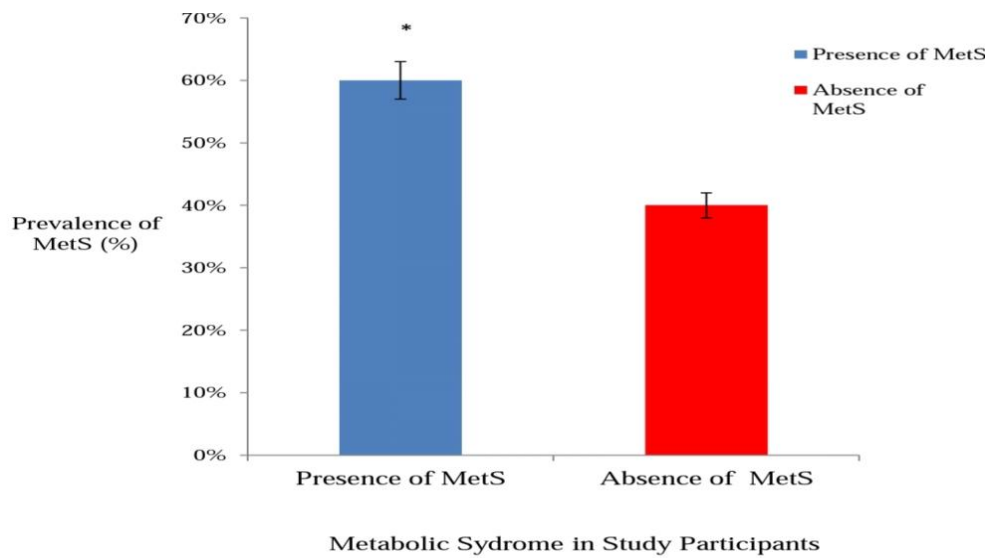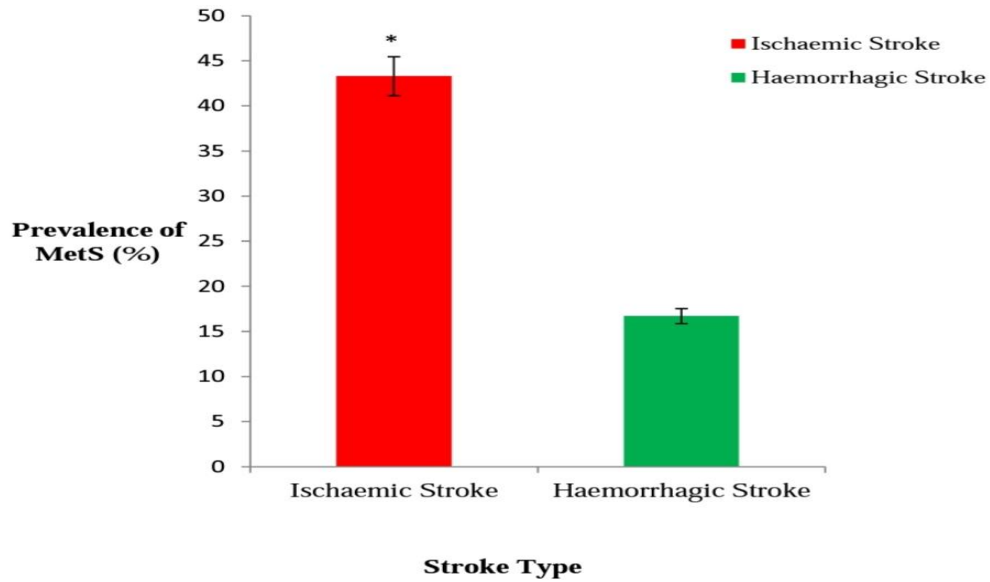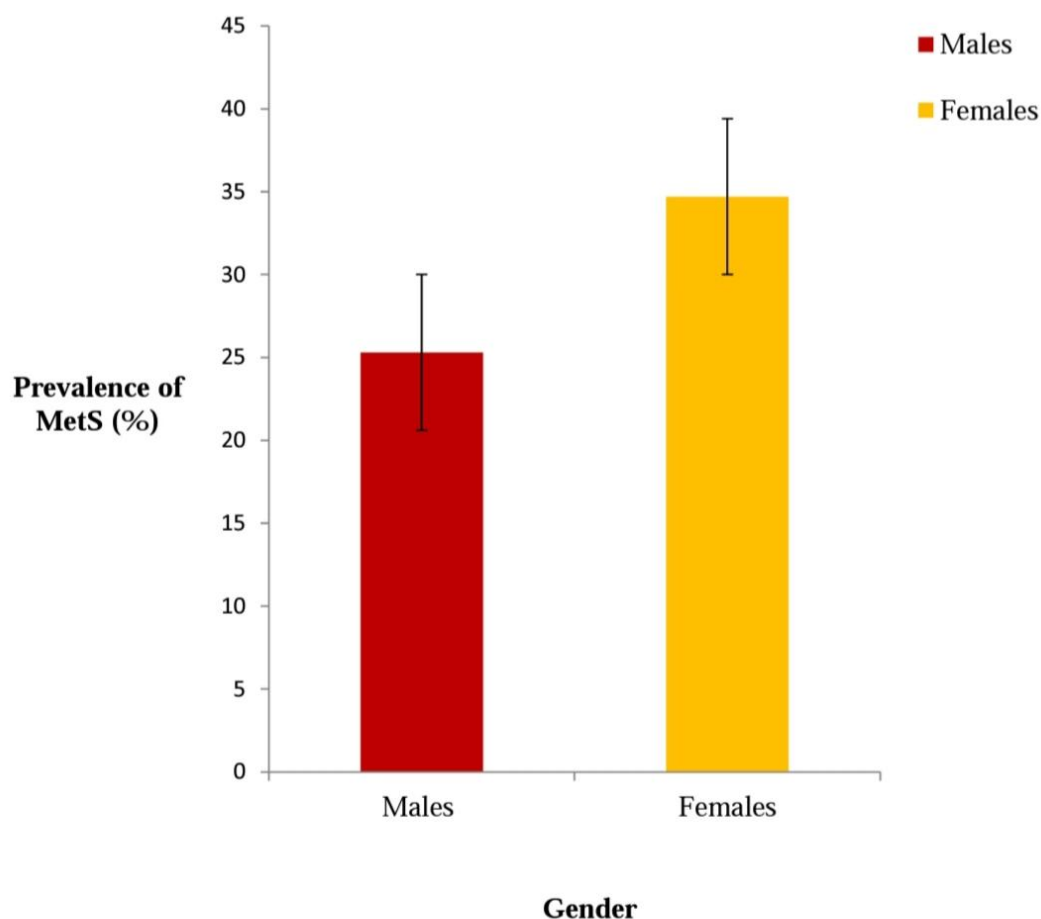
Number of MetS indicators	Male n(%)	Female n(%)	P value
0	2(1.3%)	2(1.3%)	1.0000
1	9(6%)	10(6.7%)	0.9503
2	24(16%)	13(8.7%)	0.5342
3	38(25.3%)	52(34.7%)	0.1691
TOTAL	73(48.7%)	77(51.3%)	0.7502

Mets components	Participants with mets n(%)	Participants without mets n(%)	P value
HFBG(mmol/l)	96(64%)	54(36%)	0.0010
DHDL(mmol/l)	85(57%)	65(43%)	0.0892
HBP(mmhg)	92(61%)	58(39%)	0.0086
RTGL(mmol/l)	84(56%)	66(44%)	0.1445
OBESITY (waist circumfernence)	87(58%)	63(42%)	0.0530

Discussion

Metabolic syndrome has been found as an independent risk factor of stroke. Stroke is characterised by high rates of recurrence and mortality . Since the presence of MetS has been associated with an increased risk of stroke,

assessing the coexistence of MetS with stroke in a population of stroke survivors is an important step in reducing the menace of MetS as possible risk factor for stroke recurrence.The mean age of the study participants was 57 years.

Age is one important risk factor for stroke . The average age at which people suffer haemorrhagic stroke tends to be lower than for ischaemic stroke. Similar kind of findings were observed in studies done by (Tanne et al., 2001).The results of the present study showed that there were more female (53.3%) stroke patients than males (46.7%).This observation was in parallel with studies done by (Krause et al., 2006). The results of the present study showed that the prevalence of ischaemic stroke (68%) was significantly higher than haemorrhagic stroke (32%) Similar kind of findings were observed in studies done by(Iqbal et al., 2010). Comparisons were made with the components or indicators of metabolic syndrome between patients with and without MetS, ischaemic and haemorrhagic stroke as well as both sexes.In this study, per the NCEP ATP III criteria, 64% and 61% of the participants had high fasting blood glucose (HFBG) and high blood pressure (HBP) respectively, and the differences in the proportions were significantly higher than patients with normal glycaemia and normal blood pressureAlso, waist circumference (WC), decreased high density lipoprotein (DHDL) and raised triglycerides (RTGL) were found in 58%, 57% and 56% of the participants respectively. These findings correlate with recent studies (Ashtari et al., 2012; Mi et al., 2012; Akpalu et al., 2011; Iqbal et al., 2010).our study concluded that high fasting plasma glucose was an independent predictor for stroke recurrence This observation was in parallel with studies done by Mi et al. (2012

Conclusion

Metabolic syndrome is high in acute stroke patients. There is higher prevalence of metabolic syndrome in ischaemic stroke than haemorrhagic stroke. Metabolic syndrome and stroke tend to

peak between 50 and 60 years. Female stroke patients have higher frequency of metabolic syndrome than males. High fasting blood glucose, high blood pressure and high waist circumference (obesity) are the most prevalent MetS components. Therefore, fasting blood glucose, blood pressure and body weight should be well controlled to reduce risk of recurrent stroke in patients with history of stroke especially, acute stroke and also, to prevent stroke in individuals without history of stroke.

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