ORIGINAL RESEARCH

ISCHEMIC STROKE RISK FACTORS IN SILOAM LIPPO VILLAGE TEACHING HOSPITAL

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Abstract

Introduction: Acute ischemic stroke is the second leading cause of death worldwide and considered a major health problem leading to significant disability and mortality. Stroke Risk factors epidemiology various among population. This study conducted to identify stroke risk factors in Siloam Lippo Village, a secondary teaching hospital in Banten Province, Indonesia.

Methods: This is a cross sectional study of acute ischemic stroke in the Stroke Unit of Siloam Lippo Village Teaching Hospital over a period of 3 months from January 2020 to March 2020. Data regarding the patients' clinical profile, medical history and diagnostic test results were collected then analyzed using spreadsheet and SPSS version 21.0 software.

Results: Forty-eight subjects met inclusion criteria in this study, 25 (52.08%) were male and 23 (47.92%) were female with a mean age of 58.16 ±12.02 years old. The most common risk factor for ischemic stroke in this study is hypertension (83,33%), followed by cigarettes smoking (45,83%), dyslipidemia (51,67%), diabetes mellitus (37,5%), previous stroke (37,5%) and history of heart disease (31,25%). More than 90% of subjects with hypertension and diabetes were uncontrolled.

Conclusions: The most common risk factor for ischemic stroke in this study is hypertension and cigarettes smoking, while dyslipidemia, diabetes mellitus, previous stroke and history of heart disease found in more than one-third of the subjects. Uncontrolled status for hypertension and diabetes were more than 90%.

Keywords: Hypertension, ischemic stroke, risk factors

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Introduction

Acute ischemic stroke is the second leading cause of death worldwide and considered a major health problem leading to significant disability and mortality. Global Burden of Disease 2021 showed that stroke caused about seven million deaths and over 160 million DALYs (Disability-adjusted life-years lost). Indonesia recorded an increase in the prevalence stroke in Indonesia, from 7 % in 2013 to 10.9 % in 2018. Stroke also caused high disability rate and dependency in the elderly population and increased health care cost to 2.57 trillion rupiah in 2018.[2]

Stroke Risk factors epidemiology various among population. In one Asia

study, hypertension is the most frequent risk factor, followed by diabetes mellitus and cigarettes smoking.[3] This study conducted to identify stroke risk factors in Siloam Lippo Village, a secondary teaching hospital in Banten Province, Indonesia

Materials and Methods

This is a cross sectional study of acute ischemic stroke in the Stroke Unit of Siloam Lippo Village Teaching Hospital over a period of 3 months from January 2020 to March 2020. Data regarding the patients' stroke risk factors based on medical history and diagnostic test results were collected then analyzed using spreadsheet and SPSS version 21.0 software.

Results

Forty-eight subjects met inclusion criteria in this study, 25 (52.08%) were male and 23 (47.92%) were female with a mean age of 58.16 ±12.02 years old. The average age for female population was 61.17 ±13.19 years old, which is more than 5 years older than average age of the male population (55.40 ±10.32 years old). Most of the subjects (87,5%) were under 75 years old, and one-third of the subjects were under 55 years old.

Hypertension was the most prevalent risk factors in this study, followed by smoking, dyslipidemia and diabetes mellitus, previous stroke and heart disease. Almost all of hypertensive and diabetic patients are uncontrolled based on medical history and blood parameters. Nineteen subjects in this study are still active smokers with average 20-40 cigarettes daily.

Table 1. Stroke Risk Factors (n=48)

Risk Factors		N	Percentage
Hypertension		40	83,33
Sex	Male	20	50
	Female	20	50
Duration	<1 year	1	2.5
	1-5 years	13	32.5
	5-10 years	17	42.5
	10-20 years	8	20
	>20 years	1	2.5
Status	Uncontrolled	39	97.5
	Controlled	1	2.5
Smoking		22	45,83
Sex	Male	20	90.91
	Female	2	9.09
Duration	10 - 20 years	2	9.09
	20 - 30 years	7	31.82
	30 - 40 years	3	13.64
	40 – 50 years	8	36.36
	>50 years	2	9.09
Dyslipidemia		20	41,67
Sex	Male	11	55
	Female	9	45
Diabetes Mellitus		18	37,5
Sex	Male	7	38.89
	Female	11	61.11
Duration	< 1 year	2	11.11
	1 – 5 years	3	16.67
	5 – 10 years	9	50
	10 – 20 years	4	22.22
Status	Uncontrolled	17	94.44
	Controlled	1	5.56
Previous Stroke		18	37.5
Sex	Male	10	55.55
	Female	8	44.45
Events	One-time	17	94.44
	Two-time	1	5.56
Heart Disease		15	31,25
Sex	Male	8	53.33
	Female	7	46.67
Type	Hypertensive Heart Disease	9	60
	Atrial Fibrillation	7	46.67
	Congestive Heart Failure	1	6.67
	Coronary Artery Disease	2	13.33

Discussion

Age has been known as one of stroke risk factors, with the risk increasing considerably after the age of 55, but in recent years, more data showed that stroke also occur in younger people. World Stroke Oraganization in 2022 showed that over 62% of all stroke occur in people under 70 years of age.[4] In this study, 87,5% of subjects were under 75 years old, and one-third of the subjects were under 55 years old. Stroke rise in younger people has been linked to sedentary life style which caused increased hypertension, diabetes and obesity, so as cigarettes smoking and heart disease.[5]

Women also known to have higher risk to stroke, due to longer life expectancy, higher prevalence of hypertension and obesity compared to men. In this study, female subjects were slightly lower than male, this might be due to younger age of subjects where esterogen in premenopausal women has beneficial effects on the cardiovascular system and reduce atherosclerotic risk through its impact on lipids.[6,7]

In this study hypertension was the most common risk factor which found in 83,3% of the subjects. This data is consistent with a study in Cipto Mangunkusumo Hospital on 2016 which found that 83.4% of patients had hypertension.[8] A study in Korean population showed that one-year increase of hypertension duration continuously increased the adjusted risk of ischaemic stroke. This is also consistent with our findings where most patients had history of hypertension for 5–10 years.[9] Another alarming finding is that 39 (97.50%) out of 40 patients with hypertension were uncontrolled which could have greatly contributed to acute ischemic stroke.

Cigarettes smoking is also a major health issue and must be regarded as a significant risk factor that contributes to acute stroke. A large case-control study involving 32 countries showed an 8-fold risk increase of large vessel stroke for age group of 50–59 who smoked more than 20 cigarettes/day. [10] In our study, 22 (45.83%) subjects had history of cigarettes smoking, out of which 19 are still active smokers who smoke 20-40 cigarettes/day.

In this study, dyslipidemia and diabetes are the fisk factors found in more than one-third of subjects. Previous studies showed that in people with diabetes, the risk of stroke is increased approximately two-fold and have worse post-stroke outcomes and a greater risk for stroke recurrence as compared with those without diabetes. Dyslipidemia's role in the pathogenesis of ischemic stroke, on the other hand, is less clear. Elevated LDL-C and low HDL-C levels appear to increase the risk of ischemic stroke, whereas the importance of high triglyceride levels is less clear. [11,12]

Atherosclerosis process plays a great role both in ischemic stroke and coronary heart disease, and strong corelation between acute coronary syndrome and ischemic stroke has been well established. Studies also showed that previous stroke, atrial fibrillation or flutter, and heart failure are substantial risk factors for ischemic stroke after an acute coronary syndrome. In this study, both previous stroke and heart disease found more than

one-third of subjects, which shows consistency with previous studies.

Conclusion

Ischemic stroke is a huge burden and full recovery still faces great challenges in Indonesia, therefore risk factors identification and management are crucial in primary and secondary prevention. The most common risk factor for ischemic stroke in this study is hypertension and cigarettes smoking, while dyslipidemia, diabetes mellitus, previous stroke and history of heart disease found in more than one-third of the subjects. Most of these risk factors can be managed with medication and lifestyle modification, but we still found large proportion of uncontrolled status.

Conflict of Interest

The authors declared no conflict of interest.

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