

Stroke and Acute Myocardial Infarction (AMI) in Young Indonesian Women

J. Kisjanto

Abstrak

Strok pada usia muda dianggap tak sering ditemukan, diperkirakan hanya 3 sampai 5%. Namun dalam dua dasawarsa terakhir ternyata tidak begitu jarang ditemukan, dan agaknya lebih banyak ditemukan di negara berkembang. Dari dua penelitian di Indonesia ditemukan sebanyak 11 dan 14%. Infark Miokard Akuta pada usia muda juga dianggap jarang, dan diperkirakan 7%. Tetapi pada akhir dasawarsa yang lalu naik menjadi 17%, serta diperkirakan lebih sedikit pada wanita muda. Pada penelitian ini ada kecenderungan bahwa strok (235 penderita) lebih banyak ditemukan dibandingkan miokard infark akuta (21 penderita) pada wanita muda.

Abstract

Stroke in the young was thought uncommon, estimated at a proportion of only 3 to 5%. However, in the last two decades it was considered not so uncommon, and probably higher in the developing countries. From two studies in Indonesia the occurrence was 11 and 14%. Acute myocardial infarction (AMI) in the young was also considered uncommon, estimated at 7%. But, in the end of the last decade it rose to 17%, and estimated lesser in women. In this study there was a tendency that stroke (235 patients) is more prevalent than AMI (21 patients) in young women.

Keywords: stroke, AMI, young women.

INTRODUCTION

Stroke is generally considered as a disease of the old. In the last two decades, however, many publications points out that stroke is not so uncommon in the young. The proportion of stroke occurring at a young age appear to differ by geographical area, and may be higher in the developing countries. In the seventies in the United States of America and in some European countries the proportion of strokes occurring at a young age was estimated at only 3 to 5%.¹⁻³ However, its occurrence is now estimated between 8 to 13%.⁴⁻⁶ From two studies in Indonesia the occurrence was estimated at 11 to 14%,^{7,8} while in other countries including India and Libya the proportion of strokes in the young may be as high as 19 to 30%.^{9,10} The occurrence of acute myocardial infarction in the young is also not so common only 7%, which rose in the end of the last decade to 17%,¹¹ and estimated lesser for young women. There are very few publications about

stroke and myocardial infarction in the young. The work was performed from 1989 to 1993 and formed part of the "World Health Organization Multicenter Case-control Study of Cardiovascular Diseases and Steroid Hormone Contraceptive Use".¹² This paper describes the occurrence of stroke and acute myocardial infarction in young Indonesian women.

MATERIAL AND METHODS

The hospital-based case-control study was conducted in Jakarta among 1046 Indonesian women aged 20 to 44 years.¹³ It consisted of 235 stroke, 21 AMI, 4 deep vein thrombosis and 786 controls. The present analysis concerns only the occurring of stroke and acute myocardial infarction in the Indonesian component of the WHO study. Fourteen hospitals (Appendix I) in Jakarta participated in the study from January 1, 1989 until May 31, 1993.

RESULTS

In the 4 years period were recruited 235 strokes and 21 acute myocardial infarction patients.

Department of Internal Medicine, Faculty of Medicine/
Dr. Cipto Mangunkusumo Hospital, Jakarta, Indonesia

Stroke

The general characteristics of stroke patients are presented in Table 1. The mean age was 36.7 years, ranging from 20 to 44 years. Hypertension was found 56.2%, while hypercholesterolemia in 19.7%, and diabetes mellitus in 11.5% of the patients. Only 6.8% were smoking cigarettes. Rheumatic heart disease was found in 22.5% of the ischemic stroke patients.

Table 1. General characteristics of 235 patients with stroke.

	Mean	SD	Min	Max
Age (yrs)	36.7	6.4	20	44
Height (cm)	154.9	6.0	140	172
Weight (kg)	55.4	10.5	34	88
Systolic BP (mmHg)	153.7	41.6	80	300
Diastolic BP (mmHg)	98.1	23.0	30	170
Cholesterol (mg%)	207.0	57	100	453
Hypertension (%)	56.2			
Hypercholesterolemia(%)	19.7			
Diabetes Mellitus (%)	11.5			
Smoking (%)	6.8			
Rheumatic heart disease in ischemic stroke (%)	22.5			

Overall, 47 % were ischemic strokes, 25 % intracerebral hemorrhages, 5 % (13) subarachnoid hemorrhages and 23 % other/unknown type. The blood pressure and cholesterol levels according to stroke type are presented in Table 2. The case-fatality rate was 8.5%, which is lower than the literature, varied between 17 to 34%.¹⁴

Table 2. Blood pressure and cholesterol levels according to stroke type.

	Subarachnoid Hemorrhage n=13	Intracerebral Hemorrhage n=59	Ischemic Stroke n=111
Systolic BP (mmHg)	186.9 (14.5)	170.2 (5.1)	148.7 (3.9)
Diastolic BP (mmHg)	111.5 (6.8)	106.9 (2.9)	96.0 (2.1)
Cholesterol (mg%)	176.8 (8.4)	219.8 (9.0)	209.4 (6.0)

Values are means with standard errors in parentheses

Acute myocardial infarction (AMI)

General characteristics of AMI are presented in Table 3. Mean age was 39.6 years, ranging from 32 to 44 years. Hypertension was found in 43%, hypercholesterolemia in 23.8%, diabetes mellitus 23.8% and smoking in 9.5%.

Table 3. General characteristics of 21 patients with AMI.

	Mean	SD	Min	Max
Age (yrs)	39.6	5.3	32	44
Height (cm)	153.0	3.3	150	160
Weight (kg)	50.3	10.0	41	70
Systolic BP (mmHg)	142.9	40.5	80	240
Diastolic BP(mmHg)	97.1	22.2	60	130
Cholesterol (mg%)	198.4	44.3	134	304
Hypertension (%)	43.0			
Hypercholesterolemia(%)	23.8			
Smoking (%)	9.5			
Diabetes Mellitus (%)	23.8			

The AMI consisted of 9 anterior, 8 inferior, 1 combined anterior + inferior and 3 non-Q infarction. The case-fatality rate was 4.8%.

The infarction-site of the AMI are presented in Table 4.

Table 4. Type of infarction-site in the 21 AMI patients

Infarction site	number of patients	% of total
Anterior	9	42.9
Inferior	8	38.1
Anterior + Inferior	1	4.7
Non-Q infarction	3	14.3
Total	21	100

DISCUSSION

In the stroke group hypertension played an important role. Half of the stroke patients had hypertension and/or taking antihypertensive medication. This was much higher comparing to the controls, which was only 6.2%. Also diabetes mellitus was found 11.5% in the stroke patients, which was 3.7 times higher than the controls.¹² Total serum cholesterol was found not similarly in the different stroke types, as seen in Table 2. It was lower in the subarachnoid group, comparing to the intracerebral hemorrhage or ischemic stroke. This difference may explain why in the literature there is controversy whether cholesterol is a risk factor for stroke. Rheumatic heart disease was found in 22.5% of the ischemic stroke cases, which may be the source of the embolic stroke. With such a high occurrence, it is recommended in young stroke cases to look more thoroughly for thrombus in the heart and its arrhythmia.

In the AMI group the high percentage of hypertension, hypercholesterolemia and diabetes mellitus were in

accordance to the literature, that those were the known risk factors for AMI. That smoking was found in a small percentage, was due to the still good habits that Indonesian women smoke much less cigarettes than men.⁸

The infarction site was evenly distributed in the anterior and inferior myocardial infarction. However, the 14.3% non-Q infarction needs more to be explored by coronary angiography. The case-fatality rate was 4.7%, which means that young women with AMI has a better prognosis than the old.

In the 4 years period there were 11 times more strokes (235 patients) than AMI (21 patients). This phenomenon was not only found in Indonesia, but also in other Asian countries, like China, Hong Kong and Thailand. The higher prevalence of stroke comparing to AMI was in the partial WHO collaborative study also found in the other continents, but highest in Asia and least in Europe.¹⁵

The low occurrence of AMI in these young women, although hypertension is a major risk factor and found in high percentage, but the low smoking habits (which is also a major risk factor) comparing to the European women may play an important role in preventing the heart attack. However, the difference in the high occurrence of stroke in different continent may be due to the difference in hypertension rate, which was 6.2 % (12), comparing to 3.7 % in the EPOZ-Holland study.¹⁶ The possibility of environment and genetic factors should also be taken in consideration.

CONCLUSION

The current study showed that stroke was more prevalent than acute myocardial infarction in young Indonesian women. As hypertension occurred higher than in The Netherlands; probably besides genetic and environment, hypertension played a very important role as a major risk factor for stroke. The low occurrence of AMI was besides less other risk factors such as cholesterol, probably due to the low percentage of smoking cigarettes. The relatively high (22.5%) rheumatic heart disease found in the ischemic stroke patients, merits more attention to look for thrombus in the heart.

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Appendix I. Number of stroke and AMI patients from the 14 hospitals in Jakarta participating in the study.

Hospital	Stroke	AMI
1. Dr. Cipto Mangunkusumo	75	-
2. Dharma Jaya	6	-
3. Fatmawati	37	-
4. Gatot Subroto	14	1
5. Harapan Kita	-	7
6. Husada	30	3
7. Islam	1	1
8. Jakarta	8	1
9. Pelni	11	1
10. Persahabatan	2	-
11. Pertamina	5	-
12. St. Carolus	21	6
13. Sumber Waras	19	1
14. Cikini	6	-
Total	235	21