

RISK FACTORS AND SPECIFIC STROKE TYPES OF CEREBROVASCULAR ACCIDENT CASES AT MARMARA MEDICAL SCHOOL NEUROLOGY DEPARTMENT

(Received 27 August, 1993)

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SUMMARY

Between January 1989 and July 1992, 120 patients were seen at the Marmara University School of Medicine, Neurology Department with the diagnosis of stroke. Of those 47 were women and 73 were men with a mean age 59.6 (age 29 to 87). The types of stroke were found to be: intracerebral bleeding (16.7%), transient ischemic attack (TIA) (13.8%), large vessel infarction (48.3%) and lacunar infarction (16.7%). The majority of intracerebral bleedings were of hypertensive type (64.7%), the rest being of cerebral amyloid angiopathy type (35.3%). The infarcts were thrombotic (72.4%) or embolic (27.6%) in etiology. In 75.9% of cases the infarcts were located in the territory of middle cerebral artery (MCA) while the anterior cerebral artery and vertebrobasilar system territory were affected in 20.6% and 3.5% respectively.

The most frequently encountered risk factor was hypertension (68.3%) followed by heart diseases (49%); hiperlipidemia (40.8%); smoking (26.7%); diabetes (23.4%); obesity (5.8%). Apart from those 4 patients were diagnosed as having moyamoya disease, protein-C deficiency, infarction due to cocain-related thrombosis and fibromuscular dysplasia. Three patients were found to have primary antiphospholipid antibody syndrome. One patient had vasculitis due to tuberculous meningitis.

Key Words: Stroke risk factors, large vessel infarction, lacunar infarction.

INTRODUCTION

Stroke is still a leading cause of death, ranking in the third place in most of the industrialized countries, and it is a major cause of neurologic disability in adults. Therefore the knowledge and prevention of risk factors, as well as the differentiation of different types of stroke are of great importance in the control and treatment of the disease.

In this study, risk factors as well as locations of stroke were investigated in 120 consecutive patients admitted to the Marmara Medical School Neurology Department during January 1989 and July 1992.

MATERIALS AND METHODS

In this study 120 consecutive patients followed-up at the Neurology Department during 3 years were reviewed retrospectively. All patients had a full neurologic examination. Routine biochemical blood examination (urea, electrolytes, lipid profile, blood sugar, complete blood count), cranial computerized tomography (CT) scan, carotis ultrasonography and echocardiography were performed in all patients. Stroke types were defined according to the "Classification of Cerebrovascular Diseases III" (Special Report from the National Institute of Neurological Disorders and Stroke) (1).

RESULTS

Of the 120 patients 47 (39.2%) were women and 73 (60.8%) were men with a mean age of 59.6 (age 29 to 87). (Fig.1)

The types of cerebrovascular accidents (CVA) observed were as follows: large vessel infarcts 48.3% (58 patients), lacunar infarcts 16.7% (20 patients), transient ischemic attacks (TIA) 18.3% (22 patients), intracerebral hemorrhage 16.7% (20 patients). Of these hemorrhages 35.3% were lobar (7 patients) and 64.7% were within deep structures (13 patients). The cerebral infarcts were found to be thrombotic in 72.4% and embolic in 27.6 % of cases (Fig.2).

In the majority of patients (75.9%-44 patients) infarcts were localized in the middle cerebral artery (MCA) territory, and were found in the anterior cerebral artery (ACA) and vertebrobasilar system (VBS) territory in 20.6% (12 patients) and 3.5% (2 patients) of cases respectively. (Fig.3) The major risk factor was found to be hypertension (68.3%). Then followed: cardiac diseases (49.2%: atrial fibrillation 20% and others 29.7%), hyperlipidemia (40.8%), smoking (26.7%), diabetes (23.4%), obesity (5.8%) (Fig.4).

No risk factors were found in only 2 patients (1.66%), whereas in 14 patients (11.7%) one risk factor was found, in 33 patients (27.5%) two risk factors were detected.

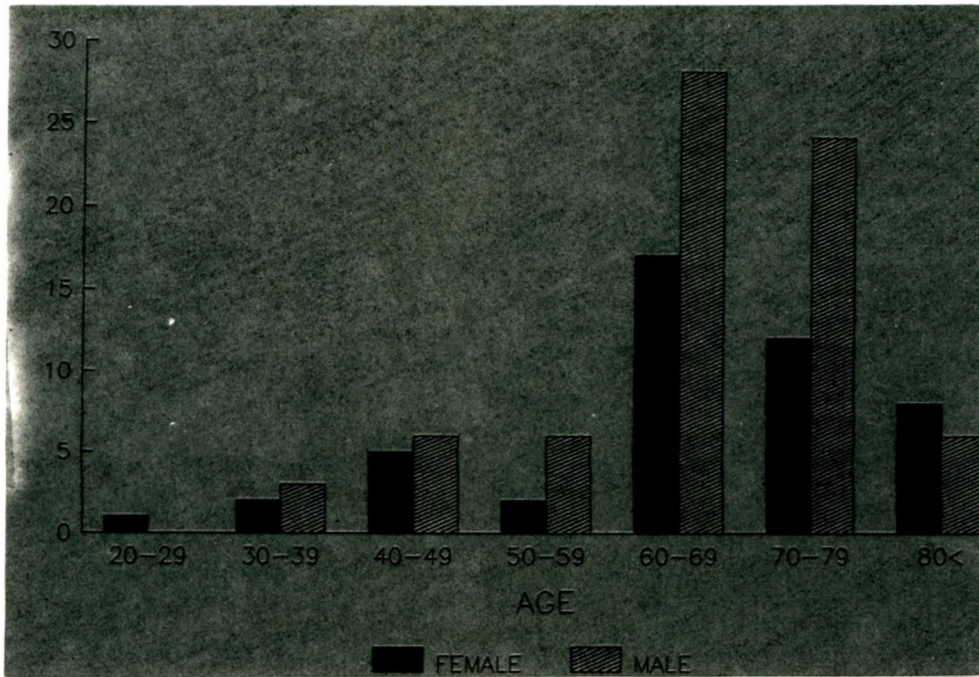


Fig.1. Distribution of patients according to age and sex.

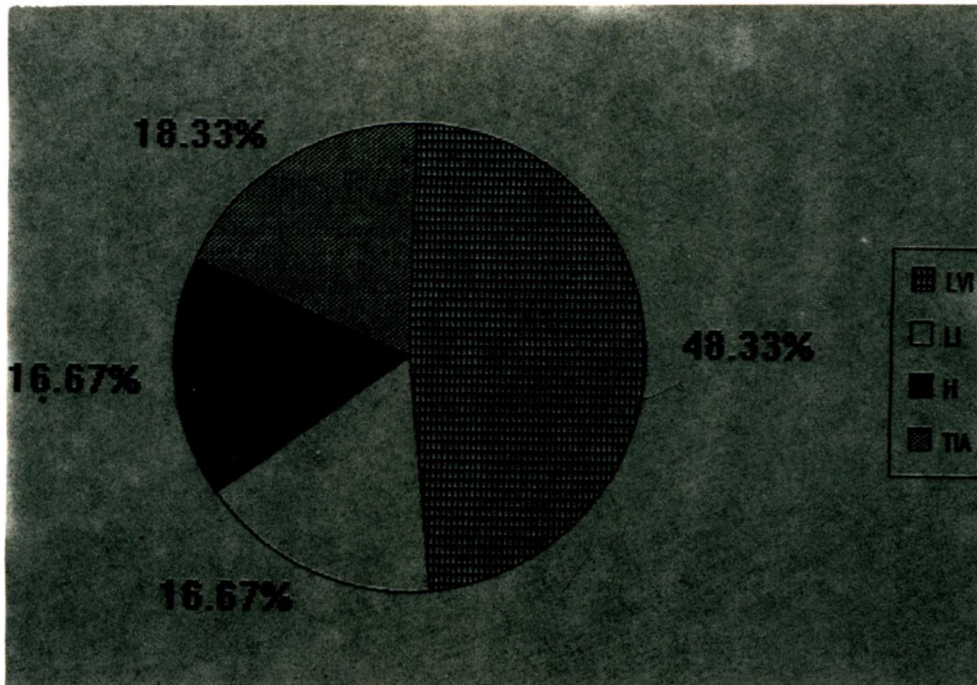


Fig.2. Stroke types encountered among our patients during the 3-year survey.
 LVI: large vessel infarct; LI: lacunar infarct; H: hemorrhage; TIA: transient ischemic attack.

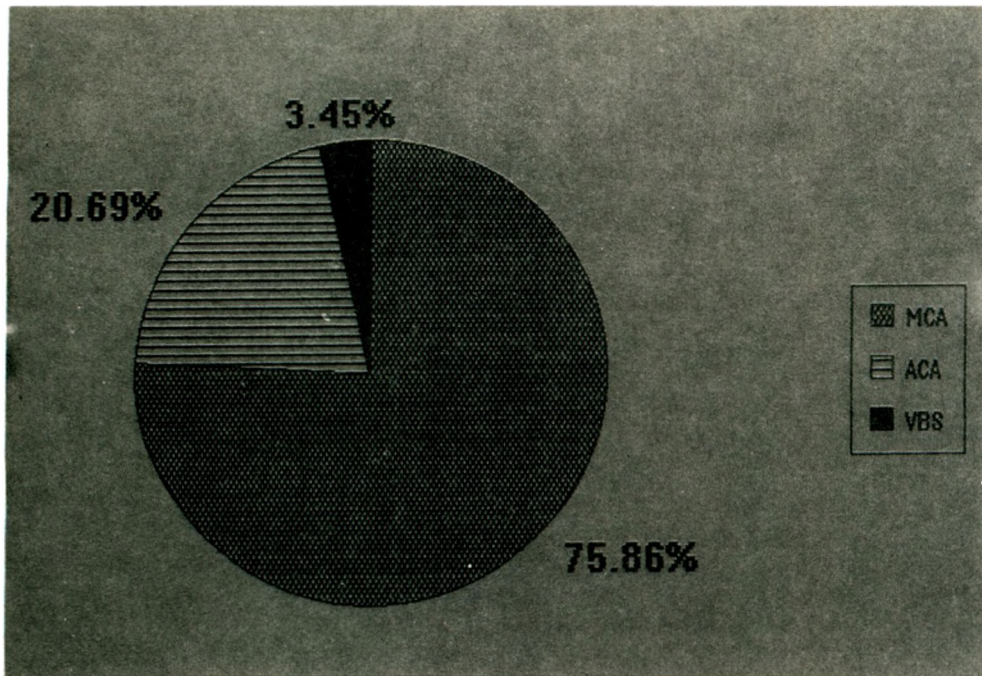


Fig.3. Infarct localization according to arterial distribution.
MCA: middle cerebral artery; ACA: anterior cerebral artery; VBS: vertebrobasilar system.

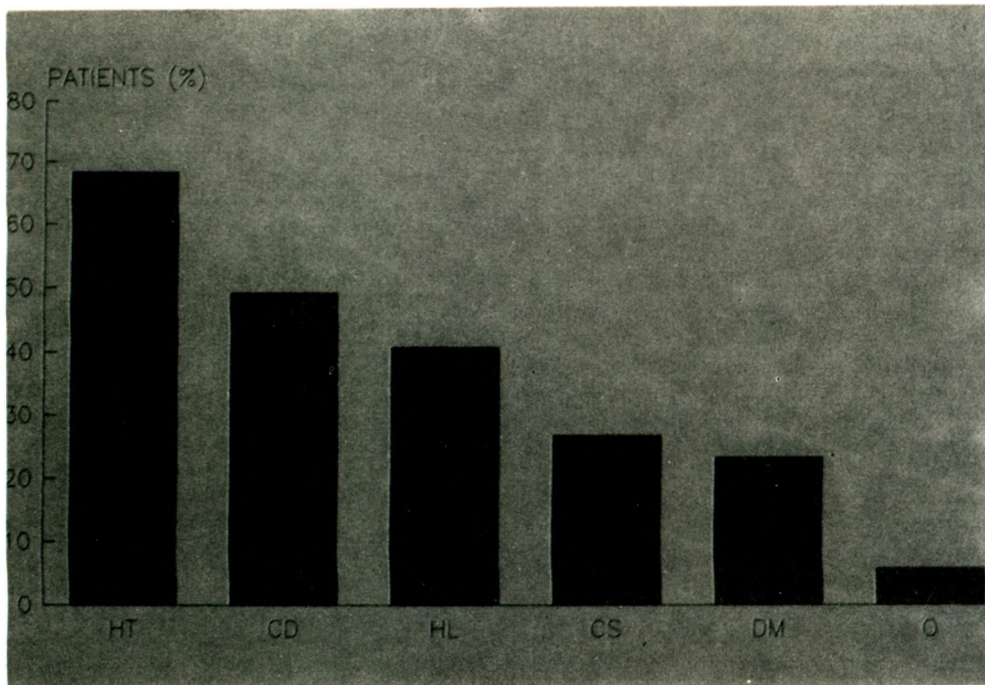


Fig.4. Risk factor distribution.
HT: hypertension; CD: cardiac diseases; HL: hyperlipidemia; CS: cigarette smoking;
DM: diabetes melitus; O: obesity.

Apart from those, four patients were diagnosed as having fibromuscular dysplasia, moyamoya disease, protein-C deficiency and infarct due to cocaine vasculitis. In three patients primary antiphospholipid antibody syndrome was found and one patient was diagnosed as having infarct due to vasculitis secondary to tuberculous meningitis.

DISCUSSION

The data obtained from this 3-year-survey, in many aspects agree with those in other published series.

Men appeared to be slightly more affected than women in all age groups. The highest incidence was in the 60 to 69 age group with 28 men (23.3%) and 17 women (14.2%) affected; followed by the 70 to 79 age group with 24 men (20%) and 12 women (10%) affected. These results were slightly different than those of the Framingham study where the most affected age group was the 75 to 84 age group followed by the 64 to 74 age group.

When the specific stroke types were considered the most frequently encountered types were thrombotic infarcts, with 31.8% and embolic infarcts, with 12% of cases. These results were similar to those reported in the Framingham study (2) and the Harvard study (3). But the intracerebral hemorrhages (ICH) were somewhat more frequent among our patients (16.7%) compared with the 5% in the Framingham study (2). On the other hand, we did not include subarachnoid hemorrhage cases in our study as in the compared studies.

In this study hypertension was found to be the most common risk factor in all types of stroke. This was in correlation with the large prospective series demonstrating elevated blood pressure as a precursor of stroke (4,5). The role of high blood pressure as an etiologic factor in the development of stroke was also supported by the large series in which reduction of stroke rates was shown after antihypertensive treatment (6,7). Similarly, treatment of isolated hypertension in the elderly was shown to decrease the stroke rate (8) by the "SHEP" (Systolic Hypertension in the Elderly Program) Cooperative Research Group.

The cardiac risk factors have been mainly determined as: coronary heart disease, congestive heart failure, ECG changes and atrial fibrillation (AF) (8-10). In our study, cardiac risk factors were found in 49.2% of cases. Of those: 20% had AF and 29.2% had other cardiac problems (including heart failure, ECG changes, coronary heart disease). AF was mainly found in the 70 to 79 age group (36% of all cases). These findings were correlated with the large series where AF had an increasing incidence: from 6.7% for ages 50 to 59 to 36.2% for ages 80 to 89 (10). This was in contrast to other cardiac factors, whose impact decreased significantly with increasing age (11). It should be added that each of these cardiac factors, apart from being risk factors independently, when

associated with hypertension greatly augmented the stroke incidence (9).

Hyperlipidemia was shown in 40.8% of our patients. In the large series this finding is still controversial. Although the serum level of total cholesterol and coronary heart disease are closely associated, its relation to stroke is less clear (12). But there are studies where abnormally high or low density lipoprotein metabolism has been linked with stroke (13). Although different results have been published, cigarette smoking has been shown to be an independent risk factor for stroke in both sexes and in all age groups in the large prospective studies (14-16). It has also been shown that smoking cessation decreases stroke risk, and that after five years of cessation this risk is at the nonsmokers level (16). In our study the smoking rate was only 26.7%, but this may be attributed to the low smoking rate in the elderly women in our country.

Diabetes was found in 23.4% of our patients. Diabetes has a known increasing effect on atherosclerosis, and it has been shown to increase stroke risk 2.5 to 4 folds (2).

Obesity was found in only 5.8% of our patients but it was accepted that for the 35 to 64 age group of men and for the 64 to 94 age group of women obesity was a factor increasing the risk of an atherothrombotic infarct.

Other risk factors for stroke that have been encountered may be cited as: fibromuscular dysplasia, moyamoya disease, protein-C deficiency, cocaine vasculitis and primary antiphospholipid antibody syndrome.

Lastly it should be noted that in 1.6% of our cases there have been no risk factors, compared to 10% reported previously (17).

As a conclusion, hypertension, cardiac diseases, hyperlipidemia, smoking and diabetes appear to be major risk factors for stroke which is in accordance with the recent literature.

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