Frequency of Focal Cerebral Transient Ischemic Attacks During a 12 Month Period

The Copenhagen City Heart Study

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SUMMARY As an offshoot of a larger prospective cardiovascular population study, the present study aimed to determine the 12 months frequency of focal cerebral transient ischemic attacks (TIAs) in persons randomly selected after age stratification from the Copenhagen city population register. A questionnaire of 5 questions pertaining to cerebrovascular attacks sustained within the last 12 months was distributed to 2,357 persons. The TIA-questionnaire was returned by 88%, of whom 22% responded affirmatively to one or more questions. The positive responders were interviewed by phone, and when suspected of having TIAs they were examined by a neurologist. A total of 11 persons proved to have had TIAs, which for the age group of 60 years and over gives a 12 months frequency of 8/1000. Dizziness, ophthalmologic problems and migraine were the most frequent causes of a “false” positive response.

IN RECENT YEARS focal cerebral transient ischemic attacks (TIAs) have been of increasing interest because they indicate increased risk for subsequent development of cerebral infarction.4-6 As the risk may possibly be reduced by adequate medical and surgical therapy, it is of importance to identify patients with such symptoms, and to estimate the magnitude of the problem. Epidemiologic studies4-6 have been performed, mainly in the USA, but have not been reported from Scandinavia. The present paper describes the 12 months frequency of TIA in a Danish population.

Selection of Study Population and Methods

The Copenhagen city heart study4 is a prospective cardiovascular population study comprising almost 20,000 men and women 20 years-of-age and older, 75% from 40 to 69 years-of-age. The participants were randomly selected after age stratification from the Copenhagen city population register. All lived within a specific area in the center of Copenhagen. They are white middle class and working class of rather good but not wealthy socioeconomic status. The participation rate was 72%.

A subset of 2,357 persons was randomly selected from the main group and given a questionnaire pertaining to cerebrovascular attacks sustained within the previous 12 months. The questionnaire was deliberately simple, containing 5 questions only, concerning blurring or loss of vision, double vision, limb paresis, speech disturbance and dysequilibrium. Those who responded affirmatively were telephone-interviewed by a specially trained medical secretary who took notes for evaluation by the neurologist (G.B.). When suspected of having had TIAs individuals were seen for a more detailed interview and neurological examination. The criteria for diagnosis of TIA were those given by Millikan et al.10

Results

The TIA questionnaire was returned by 2,088 persons (88% of the 2,357). Of these, 1,623 (78%) had no complaints, while 465 (22%) responded affirmatively to one or more questions. Four hundred and fifty positive responders were interviewed by phone, and 55 of these had a neurological examination later. In 15 a positive response could not be further evaluated.

From the whole sample of 2,088 persons, 11 were believed to have had TIAs during the 12 months period under study; 5 of these, however, had experienced TIAs prior to this period. Four had TIAs related to the brain supplied by the carotid artery, 4 to the basilar artery. In 3 the specific brain areas and arterial territories remained undetermined. One patient had an atherosclerotic plaque demonstrated in the carotid artery, but she declined vascular surgery. Another patient was offered angiographic examination, but refused. For different reasons further examination was not considered indicated in the remaining patients.

Four patients had a moderate hypertension which was being treated. All were put on acetylsalicylic acid treatment, 1 g/day.

Of the 679 persons in the age group 60 years and over, 6 persons had had TIAs — a 12 months frequency of 8/1000. Of the 737 persons in the age group 50-59 years old 3 had had TIAs — a 12 months frequency of 4/1000.

The causes of complaints in the 465 positive responders are listed in the table. The 15 with whom a personal interview could not be obtained are listed as “lost.” Dizziness ranked highest as a symptom, and most often was a sensation of dysequilibrium on standing up quickly. Minor ophthalmologic problems were frequently the reasons for a positive answer. In 10 instances the symptoms were attributed to a previously sustained stroke.

Discussion

Epidemiologic studies on TIA are still few, and the literature is difficult to evaluate because some studies

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determine the prevalence, others the incidence and still others the 12 months frequency. The prevalence of TIA is hard to assess since the recollection of a TIA sustained years ago may be faulty. Further, the prevalence may not be a useful measure, since the risk of a subsequent stroke may be declining for each successive year. Incidence studies would require that patients with recent TIAs be excluded if they had had TIAs prior to a defined period. Such a limitation seems unjustified for rare attacks like TIA. Wilkinson et al. used the 12 months prevalence, which includes all instances of TIA within that period whether or not TIAs have occurred during previous years. We chose this approach, as clinically the most relevant.

In Georgia, USA, in a rural area, the prevalence was 18.1/1000 in the age group over 65 years in a mixed black and white population.

In Cook County, Illinois, USA, the prevalence of TIA in a poor urban population in the age group 65–74 years receiving public financial aid was 46/1000 in white persons and 77/1000 in black persons. These unusually high figures may reflect social selection.

A social selection in the opposite direction may have occurred in a retirement community study in California, where the yearly incidence of TIA was 1.1/1000. That study was based on a review of medical records, which also may have contributed to the low figure.

In Rochester, Minnesota, USA, the average annual incidence rate for first episodes of TIA was 2.2/1000 for the age group 65–74 years. These data also were based on review of medical records.

In a multi-community study which concerned approximately 10,000 persons above 60 years-of-age, responses to a questionnaire were evaluated and all the positive responders, as well as a large part of the negative responders, had a neurological interview. Based on these interviews the 12 months prevalence of TIA was 8.3/1000. The "false positive" responders amounted to about 21%. About one quarter of those diagnosed by the neurologist as having had a TIA, had failed to indicate this in the questionnaire, giving an estimate of the proportion of false negative responses.

Our results are most comparable with those of the latter study. Thus, the 12 months frequency for the age group above 60 years was almost identical. However, our study did not include an estimate of false negative responses, which could only mean that our figure of 8/1000 may be too low. It is surprising that the numbers of "false positive" responses (22% versus 21%) are so similar, since our questionnaire contained 5 questions only, while that of Wilkinson et al contained 40 main questions and about 70 derived or secondary questions. This finding may reflect the inability of many elderly people clearly to understand the meaning of written questions. Questionnaires are useful as a crude screening method only: the personal interview is indispensable for confirmation or rejection of the diagnosis of TIA.

References

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