Long term prognosis after occlusion of middle cerebral artery

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Abstract

Seventy patients who had developed occlusion of the middle cerebral artery confirmed by angiography between 1970 and 1980 were followed up after an average of six years. Fourteen patients had died in the acute stage of the initial stroke. In the remaining 56 patients actuarial analysis showed that the observed incidence of survival for five years was 81.8% compared with an incidence of 94.1% in a matched normal population. Six patients sustained new strokes, four of which were ipsilateral to the middle cerebral artery occlusion. The observed cumulative incidence of subsequent strokes was 2% a year for the first five years of follow up. Twelve patients developed epileptic seizures.

Introduction

The natural history and long term outcome of occlusion of the middle cerebral artery have not been clearly defined. As extracranial bypass surgery in occlusion of the carotid or middle cerebral artery is currently being evaluated¹ the long term prognosis in patients who sustain further strokes on the occluded side is of interest. We undertook the present study to evaluate the long term prognosis in patients with occlusion of the middle cerebral artery.

Patients and methods

We received 70 patients (46 men and 24 women) with occlusion of the middle cerebral artery or its branches who had undergone cerebral angiography in our departments between 1970 and 1980. At the time of angiography their mean (SD) age was 54.8 (13) years. Fifty six had occlusion of the main stem of the middle cerebral artery (32 on the left side, 24 on the right side), and 14 had occlusion of one or more of its major branches (eight on the left side, six on the right side). Five patients had plaque or stenosis in the ipsilateral cervical internal carotid artery.

Sixty seven patients had been admitted to hospital for stroke ipsilateral to the occlusion of the artery and three patients for transient ischaemic attacks. On admission three patients presented with atrial fibrillation (due to valvular heart disease in one and to myocardial infarction in one). Before admission 12 patients had experienced earlier transient ischaemic attacks. Angiography was performed, by injecting the brachial artery or via the transfemoral route, within 24 hours of stroke in 16 patients, within two weeks in 37, and after more than two weeks in 17.

Fourteen of the 70 patients (10 with occlusion of the middle cerebral

artery and four with occlusion of its branches) died in the acute stage of the initial stroke. Follow up data on the occurrence of stroke, myocardial infarction, transient ischaemic attacks, epileptic seizures, and death were obtained in the remaining 56 patients either by personal examination or by direct telephone interview with the general practitioner. The net probability of death during follow up was determined by actuarial analysis² and the cumulative risk of stroke by the Kaplan-Meier method.³

Observed survival after occlusion of middle cerebral artery in 56 patients. Expected survival is for a matched normal population.

Results

All 56 patients who survived the initial stroke were followed up. The period of follow up averaged six years, during which 14 patients died; the cause of death was stroke in three, cardiac disease in four, and cancer and miscellaneous disorders in seven. Actuarial analysis showed that the observed incidence of survival over five years was 81.8% compared with an incidence of 94.1% in a normal population of similar age and sex distribution (figure).

Six patients sustained a new stroke during the period of follow up. Stroke ipsilateral to the occlusion of the middle cerebral artery occurred in four patients, one of whom died, and contralateral stroke occurred in two, both of whom died. The observed cumulative incidence of stroke was 3.5% at one year, 5.5% at two years, 7.6% at three and four years, and 10.4% at five years. Of the 10 patients who had occlusion of the branches of the middle cerebral artery two died from lung disease and one suffered an ipsilateral stroke in the follow up period. Of five patients with a concomitant lesion of the ipsilateral carotid artery, one died from the first stroke and one died of a subsequent contralateral stroke. Five patients with occlusion of the middle cerebral artery were aged under 35 at the time of angiography. None of these had subsequent strokes.

Five patients had transient ischaemic attacks during the period of follow up (four ipsilateral to the artery occlusion, one in the vertebro-basilar area). Seven patients sustained myocardial infarction. Twelve of the 56 patients developed epileptic seizures (both partial motor and secondarily generalised seizures in eight, secondarily generalised partial seizures alone in four). (We considered only epilepsy occurring late after ischaemia—that is, at least one epileptic seizure occurring two weeks after stroke.) The epileptic seizures developed in most patients within two years after the stroke and were easily controlled with anticonvulsant drugs.

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None of the patients studied received treatment with anticoagulants, although a few received dipyridamole. Of the 42 patients still alive at the end of the follow up period, nine had returned to work, 16 required help, and 17 were totally disabled.

Discussion

Several studies have reported the typical clinical and angiographic features of middle cerebral artery occlusion—namely, that occlusion of this artery usually develops in young patients, commonly presents as a stroke, and is associated with lesions that are often not atherosclerotic.⁴⁻⁶ Knowledge of the natural long term prognosis associated with occlusion of the middle cerebral artery is, however, still largely incomplete.

Lascelles and Burrows reported that, of 59 patients with occlusion of the middle cerebral artery, 12 died from the first stroke; of the 47 survivors, three died of miscellaneous causes and one of fatal stroke.⁷ Kaste and Waltimo found that of 74 survivors of a first stroke due to occlusion of the middle cerebral artery, four had a second stroke, the locations of which were not given.⁸ Hinton *et al* reported on 16 patients with stenosis of the middle cerebral artery⁹: during a follow up that lasted from one month to six years two patients developed an early stroke and one had repeated transient ischaemic attacks.

In our study only four patients had a new stroke on the occluded side during follow up, representing less than 2% a year for the first five years after angiography. The risk of subsequent strokes after occlusion of the middle cerebral artery is therefore quite small. Occlusion of the internal carotid artery has been reported by Furlan *et al* (2% a year)¹⁰ and by Norrving and Nilsson (1% a year)¹¹ to have a similarly good prognosis. Two recent studies, however, reported that intracranial stenosis of the internal carotid artery is associated with a high risk of subsequent strokes.^{12 13}

In our study we found a high incidence of late epileptic seizures. This was probably because occlusion of the middle cerebral artery is often due to embolism and infarcts are cortical.

We thank Dr M Marinelli for statistical help.

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(Accepted 16 February 1984)

Respiratory viruses and sudden infant death

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Abstract

Viruses were shown to be present in the respiratory tract in 200 of 763 cases of the sudden infant death syndrome studied in the nine years 1974-82. Epidemiological and pathological evidence suggested that the distribution of viruses in the sudden infant death syndrome differs between infants aged 3 months or less and those aged over 3 months: the incidence of detection of virus was 14% in the younger group compared with 39% in the older group. The distribution of the viruses in these two groups was compared with that in 1341 live infants with respira-

tory virus infections. Adenovirus, influenza virus, parainfluenza virus, and rhinovirus had similar distribution among the victims of the sudden infant death syndrome and live controls. The incidence of detection of respiratory syncytial virus was increased in the older infants dying of the sudden infant death syndrome (90% of the cases detected) compared with the older group of live infants (53%).

Antibody studies, detection of virus, and epidemiological data suggest that respiratory syncytial virus may be a precipitating factor of sudden death in older infants.

Introduction

During the past 20 years many workers have reported the isolation of viruses from infants who have died suddenly and unexpectedly and for whose death no adequate explanation can be given.¹⁻⁵ Such viruses have been isolated most commonly from faeces or secretions of the respiratory tract. We report the detection of virus by isolation or immunofluorescence, or both, in secretions of the respiratory tract from a series of 763 infants dying suddenly and unexpectedly and from controls.

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