Increased Incidence of Bleeding Intracranial Aneurysms in Greenlandic Eskimos

By

Marianne Østergaard Kristensen

With 2 Figures

Summary

In the six-year period 1976–1981 the incidence of bleeding of intracranial saccular aneurysms in Greenlandic Eskimos was compared retrospectively to that in Caucasian Danes. The study comprises only patients admitted to a Neurosurgical Department. Criteria for admission and diagnosis were similar in the two populations. Incidence rates for all ages were 9.3 and 3.1 per 100,000 population per year among Eskimos and Caucasian Danes, respectively. Weighting differences between the two populations regarding population size, age distribution and number of patients, the relative risk for Eskimos compared with Caucasian Danes was 4.4 (95% confidence limits 2.9–6.5). In an attempt to account for this finding, the possibility of different connective tissue properties in the two populations is briefly discussed.

Introduction

Receiving all patients from Greenland requiring neurosurgical treatment, it has been the impression at the Department of Neurosurgery, Rigshospitalet, Copenhagen, Denmark, that Greenlandic Eskimos succumb to subarachnoid bleeding caused by ruptured intracranial saccular aneurysms more often than Caucasian Danes. The aim of this study was to compare retrospectively the incidence rates of this type of subarachnoid haemorrhage (SAH) in the Greenlandic Eskimo and eastern Danish populations. This was considered important since any difference in epidemiology would pose the question as to genetic and/or environmental factors responsible and might reveal new aspects in elucidating the etiology and pathogenesis of bleeding intracranial saccular aneurysms.
Methods and Material

The study comprises all patients admitted to the Neurosurgical Departments of Zealand, Denmark*, in the period from 1 January 1976 to 31 December 1981, suffering a subarachnoid bleeding due to a ruptured intracranial saccular aneurysm. In all cases this diagnosis was based on the following: 1. anamnestic information and clinical findings suggesting the diagnosis and, 2. diffusely bloody or xanthochromic cerebrospinal fluid on lumbar puncture and/or blood visible in the subarachnoid space on computer tomography of the brain and, finally, 3. cerebral angiography visualizing a saccular aneurysm and (in most cases) operation or autopsy disclosing the recently bleeding aneurysm.

Patients belonged to either the common eastern Danish or the Greenlandic Eskimo population. Patients classified as Eskimos were all born in Greenland, had a typical Eskimo appearance and/or preferably spoke the Greenlandic language. The populations were geographically well defined (i.e., Zealand with its surrounding islands and Greenland) and annually registered by the Statistical Department of Denmark. All information regarding the two populations was obtained from the annual reports in Statistical Yearbook of Denmark for the years 1977–1982. Estimating the Eskimo population, a Greenlandic Eskimo was defined as a person born in Greenland.

Estimates of incidence rates were based on the average populations in the six-year period studied. The relative risk of Greenlandic Eskimos compared with eastern Danes of suffering this type of SAH was estimated by means of a logistic regression model (taking into consideration differences in population size, age distribution and number of patients). Operating with 8 binary variables, the members of the two populations were classified according to age and population, using 7 variables for age and 1 for population. It is assumed in the model that the (odds)ratio between incidence rates in the two populations is the same in all age groups considered (for further details on the statistical analysis see 2).

Results

In the six-year period 1976–1981 the average eastern Danish and Greenlandic Eskimo populations were 2,332,313 and 48,151, respectively. Age distributions are given in Table 1. It should be noted that nearly half of the Eskimo population, i.e. 49.6%, was less than 20 years old compared with 27.2% of the eastern Danish population. Only 2.1% of Eskimos reached the age of 70 versus 9.5% of eastern Danes. Sex distributions did not differ significantly (51.2% females in the eastern Danish population, 50.4% females in the Greenlandic Eskimo population).

During the period studied, 436 eastern Danish (280 females and 156 males) and 27 Greenlandic Eskimos (16 females and 11 males) were admitted to a Neurosurgical Department because of a SAH due

* Neurosurgical Departments of Zealand, Denmark, in the period studied: Rigshospitalet, Copenhagen, Copenhagen County Hospital, Glostrup, Bispebjerg Hospital, Copenhagen (from 1 to 26 January 1976), Copenhagen Municipal Hospital, Hvidovre (from 7 February 1976).