PREVENTIVE MEDICINE 4, 509–517 (1975)

Concordance for Mortality with Special Reference to Ischaemic Heart Disease and Cerebrovascular Disease[1]

A Study on the Swedish Twin Registry

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The Swedish Twin Registry contains about 11 000 same-sexed twin pairs born between 1886 and 1925 with both members alive when the registry was formed in 1961. During the years 1962 to 1973, 2780 deaths occurred, 727 deaths were due to ischaemic heart disease (IHD), 345 due to cerebrovascular disease (CVD), and 727 due to cancer. The rate of concordance for the whole twin population revealed a significantly ($p < 0.05$) higher concordance rate for IHD among the male monozygotic (MZ) pairs as compared to the dizygotic (DZ) pairs (15.8% versus 8.0%). The corresponding figures for the female pairs were 11.0% (MZ) and 7.5% (DZ), respectively. With regard to death in CVD and cancer, the rates of concordance were about the same for MZ and DZ pairs in both males and females. When subgrouping was made for age groups, the difference in concordance rate for IHD in males was still more pronounced for the younger age group, born 1901–1925, (16.1% versus 5.4%). These data may indicate the existence of a genetic determination on death in IHD, especially in males, whereas a genetic determination on death in CVD and cancer seems more uncertain.

In the etiology of ischaemic heart disease (IHD) and cerebrovascular disease (CVD), most interest has been focused on environmental influences, since these can be modified and controlled. That environmental factors play an important part, especially in the development of IHD, indeed seems to be strongly documented. It is also commonly recognized that IHD has some hereditary basis that comes into play with the environmental factors (3, 33). Several studies have demonstrated a familial aggregation which regard to IHD (16, 25, 26, 27, 28, 32), whereas the more sparse data on familial clustering of CVD (2, 22, 23, 25) are not very impressive. Prospective studies have also disclosed familial aggregation of IHD (10, 17, 29). However, modest familial concentrations may be found for most common diseases for which they have been sought (11, 24). The genetic mechanisms are probably partly transmitted through underlying biological factors such as cholesterol and blood pressure. All available evidence supports the assumption that these factors are polygenetically controlled, but some

[1] Presented at the Conference on Cardiovascular Disease Epidemiology, Tampa, Florida, March 1975.

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