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Modern Epidemic

Professor J.N. Morris

Abstract

All I have to say comes from prospective studies of ischaemic heart disease made in America and in this country since World War II. In Framingham, as in the other surveys, all those who already had signs of ischaemic heart disease were put aside, and the great majority who showed no evidence of it were followed up over the years. More men than women developed the disease during middle age. In this age group, there are three main manifestations of ischaemic heart disease - sudden death, classical myocardial infarction, and angina pectoris. When the total picture in Framingham was divided up according to these different modes of presentation, they found that in those who develop angina pectoris without classical infarction there is some excess of males in the thirties; near equality in the forties; in their fifties more women were affected than men. Many of these people of course do not come for medical care, they have these symptoms but ignore them.

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THERAPEUTIC SESSION

Chairman: Sir John McMichael, F.R.S. *Olim Scriba*

MODERN EPIDEMIC

(Abridged)

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All I have to say comes from prospective studies of ischaemic heart disease made in America and in this country since World War II. In Framingham, as in the other surveys, all those who already had signs of ischaemic heart disease were put aside, and the great majority who showed no evidence of it were followed up over the years. More men than women developed the disease during middle age. In this age group, there are three main manifestations of ischaemic heart disease—sudden death, classical myocardial infarction, and angina pectoris. When the total picture in Framingham was divided up according to these different modes of presentation, they found that in those who develop angina pectoris without classical infarction there is some excess of males in the thirties; near equality in the forties; in their fifties more women were affected than men. Many of these people of course do not come for medical care, they have these symptoms but ignore them.

Our own first study compared London Transport bus drivers and conductors. The total incidence of ischaemic heart disease was higher in the drivers. Sudden death as first clinical manifestation was just over twice as frequent among the drivers throughout middle age, with a ratio of 3·1 in the early part of middle age, falling to about 1½–1 in the latter part. But angina was commoner in the conductors than in the drivers.

Similar observations have been made in the Civil Service, comparing clerks and postmen. The total incidence and the sudden death rate was higher among the clerks, but angina was commoner in the postmen. Angina, unlike classical infarction and sudden death, is more common in physically active men. The same has been found in some American studies.

Has the incidence of angina pectoris increased through the years? There is no answer. Osler made the interesting observation that there are

far more cases outside hospital than inside, the disease being commoner in consulting practice. The particular problem of angina is that it is just a symptom, and that the reaction to placebo may be good. In a follow-up of 2,000 men in Chicago those who were nervous and preoccupied with bodily symptoms developed angina more commonly than the rest, while those who were not so nervous were more liable to develop classical infarction and sudden death. Cigarette smokers have twice as much ischaemic heart disease as non-smokers, including a higher incidence of angina.

It is clear that angina behaves differently from classical infarction in several respects. The most important of course is in prognosis. We have studied the Medical Sickness Society population of several thousand doctors, classified according to the way coronary disease first presented, following these cases for 15 years. 252 cases presented with infarcts, and 30 per cent died within a week of onset of the first clinical attack, many on the first day; at the end of the 5th year half the group were still alive, though some had died from other conditions. The 52 men having angina pectoris without recognized infarction had a far better early prognosis, very few dying in the first 5 years and 50 per cent surviving 10 years.

Coronary disease emerged from obscurity during the present century to become very common. Something like 1 in 5 men in this country now develop clinical ischaemic heart disease in middle age. It is the leading cause of death in middle age, nearly a third of deaths being certified to it. Ischaemic heart disease costs something like £50–£100 million per year in health service, social security payments and widows benefits; it is the greatest single cause of pensionable widowhood in this country. The monetary loss in wages and salaries per year to families of victims of the disease must now run to as much as £200–£300 million annually.

The greatest incidence of ischaemic heart disease is seen in developed countries with a high standard of living, an urban industrial, high consumption society. It has long been known that IHD is commonly associated with high blood pressure and raised blood cholesterol levels; epidemiological studies in recent years show that these two phenomena are apparent long before the heart disease, and in fact can be used to predict its occurrence and to identify high-risk individuals. In our own prospective study on London busmen, the men with raised systolic blood pressure at the initial examination (defined arbitrarily as the top quarter of the distribution) developed ischaemic disease more commonly than those with lower levels. These were casual readings and, meanwhile, the casual systolic pressure is a better predictor than any of the other 9-11 measurements of blood pressure at the intake examination. This has been found in at least one other investigation. Skin-fold thickness was measured at the initial examination; as in other such prospective studies, the men who were fattest developed ischaemic heart disease more commonly, but the excess was unimpressive. Casual blood cholesterol ranged from 115 to 385, mgm/100 ml. Men with high levels were far more liable to ischaemic heart disease than colleagues in the same occupation, of the same age, with low.

These prospective studies have shown the importance of two main factors - blood pressure and blood cholesterol. Blood sugar levels may also be important but there is not yet any published prospective study. When blood pressure and cholesterol readings are put together with other factors found to be important in this disease - occupation, age, family history, cigarette smoking, etc., it is possible to give all the men that we have studied a score implying cumulative risk, and a striking picture emerges. The incidence of ischaemic heart disease in the most susceptible group scoring badly in terms of B.P., cholesterol and several other factors is about twelve times that in the least, the men with most favourable B.P., cholesterol, family history, etc. However B.P. and cholesterol levels dominate the picture and the other 7 factors contribute only marginally, suggesting that much or more of their contribution is via these two. Does this offer possibilities for preventive action? Specifically, if high blood pressure or high blood cholesterol are successfully treated, will the heart disease be prevented? It is

impossible to answer these questions from the data available at present. A trial that hopes to provide the answer in regard to hypercholesterolaemia is now under way and will be described by Dr. Oliver.