SCREENING FOR CORONARY HEART DISEASE

Anton Borg

INTRODUCTION

Malta and the United Kingdom share the dubious distinction of being among the three countries with the highest mortality rate from Cardiovascular disease in Europe; other countries in the Mediterranean basin have much lower rates.

This presentation deals with a screening clinic for men carried out in my practice in the English West Country market town of Cirencester (population 16,000); the aim is a mass assault on risk factors for coronary heart disease, and results as the end of the first year suggest that, given sufficient opportunity and information, people are willing to be screened and to alter their lifestyle to reduce their level of risk of developing coronary disease.

In the United Kingdom in 1987, out of a total number of deaths of 563,500, 49% were due to cardiovascular disease; 30% of deaths in middle aged men and 25% in middle aged women, are due to coronary heart disease, the principal form of cardiovascular disease in this age group.

In Malta, between 1985 and 1987, the mortality rate (1) from coronary heart disease in men ranged from 12.5% of the total in the age group 30-39 to 33% in the age group 60-69, with a mean of 31.6% of all deaths. In women, the corresponding rates were 0% to 26.4% with a mean of 21%.

An international comparison of cardiovascular mortality data from 1980 (2) showed that the age-standardised death rate from cardiovascular disease in Maltese men was the third highest, and in women, the second highest, in Europe. Maltese women have the third highest coronary heart disease mortality rate, and men the fifth highest.

Mortality rates from coronary heart disease in other Mediterranean countries were less than half that in Malta. By contrast, mortality from cardiovascular disease approaches the rest of Europe.

WHY IS THIS THE CASE?

The risk factors for coronary heart disease are well known, the principal ones being smoking, hypertension and hypercholesterolaemia. Cigarette smoking increases the risk two to three times over non-smokers, particularly if more than ten per day are smoked (3). Cigar and pipe smoking do not appear to have much influence, although there are risks of malignancy and chronic obstructive airways disease.

Stopping smoking reduces the risk to normal within a couple of years (3). 30% of adult British males and 50% of adult Maltese smoke. In a young adult, a systolic blood pressure of 148mmHg and diastolic of 95mmHg double the risk of coronary heart disease. Around 20% of adult Maltese and Britons have a blood pressure of 140/90 or over. Unfortunately, there is no clear evidence that controlling hypertension in isolation reduces the risk of coronary heart episodes.

A total cholesterol of 6.5mmol/l(4) doubles the risk in comparison with a normal within a couple of years (3). 30% of adult British males and 50% of adult Maltese smoke. In a young adult, a systolic blood pressure of 148mmHg and diastolic of 95mmHg double the risk of coronary heart disease. Around 20% of adult Maltese and Britons have a blood pressure of 140/90 or over. Unfortunately, there is no clear evidence that controlling hypertension in isolation reduces the risk of coronary heart episodes.

In the U.K. the average adult total cholesterol level is 6.2. In Malta (1985-87), men aged 35-44 had levels of 6.0, and men aged 55-64 levels of 6.3; women aged 35-44 averaged levels of 5.9, and aged 55-64 levels of 7.3 mmol/l.

Premenopausal women are protected by oestrogen. After the menopause, the risk of atherogenesis trebles (5). 15% of Maltese adults aged 35-65 are diabetic (2); Diabetes Mellitus doubles the risk of coronary heart disease only in areas of prevalence of the disease, and therefore probably only accelerates already present atherosclerosis; non-insulin dependent diabetes is associated with (6) obesity, hypertension, raised triglycerides and low HDL-cholesterol; it causes abnormality of platelet and coagulation function. The average Maltese male has a body mass index of 26kg/m2 (2). Obesity increases the risk of developing coronary heart disease by raising cholesterol levels and blood pressure.

Alcohol intake is also positively related to cholesterol and blood pressure levels, and is a staple constituent of the Maltese and British diet. About 1,500,000 Britons are estimated to have an alcohol problem.

All these risk factors are not simply additive in their effect. Analysis of the Multiple Risk Factor Intervention Trial (7) in the USA demonstrates a low risk attached to mild hypercholesterolaemia in isolation, but a multiplication in level of risk is other factors were involved. Most coronary episodes occur in people with moderately elevated levels of cholesterol together with other co-existent risk factors. The population levels of smoking and hypertension in Malta and the U.K. are not at significant enough variance from other European nations, and therefore, the much higher than average serum cholesterol levels are thought to explain the significant difference in rates of coronary heart disease. In countries such as the USA, Australia, Finland, Norway and France, where levels of the disease have dramatically declined, so has the average cholesterol level, as a consequence of change in dietary habits.

The Maltese and British diet is similar in its high proportion of saturated and
unsaturated fats, and high levels of salt and refined carbohydrate, with a deficiency in fibre.

Furthermore, studies such as the North Karelia and Oslo project, and the Multiple Risk Factor Intervention Trial demonstrate that mass assault on risk factors achieves significant reduction in coronary events.

WHAT CAN BE DONE?

Two strategies (8) can be employed to reduce levels of risk: the population strategy and the individual, or high risk, strategy. They are complementary and must be run simultaneously.

The population strategy involves public education to promote a healthier lifestyle. It requires Government financial support for education through the mass media, schools and places of work. A review of taxation levels on tobacco and alcohol, and a food labelling policy can be implemented. In Britain, a population strategy barely exists. The health professions and even MPs on the House of Commons Public Accounts Committee (9) have been highly critical, the latter citing "complacency at every level in the Department of Health" as the reason for the "generally poor performance by Great Britain" in matching other Western nations in efforts to reduce coronary disease levels.

Expenditure per annum on coronary prevention in the U.K. averages 10 million, whilst treatment costs around 500 million.

The individual, or high risk strategy, involves screening people on an opportunistic or by-invitation basis. Since most Maltese and Britons have one or more risk factors, this strategy is highly expensive in financial and manpower terms.

Some workers favour screening only people perceived to be at high risk, such as people with a family history of coronary disease before the age of 50, diabetics, hypertensives, the obese, the hyperlipidaemics and ones with a personal history of cardiovascular disease. The problem is that this way, less than 50% of people at risk will be detected. Most coronary episodes occur in people judged to be only at moderate risk. When we decided to set up the screening clinic in Cirencester, because of the absence of a national population strategy, we chose the individual approach and decided to screen all our middle aged men, having discounted the idea of screening only perceived high risk patients as inadequate.

We used our own computerised age sex register to compile a list of men aged 35-55 and sent postal invitations to four men per week; we also advertised the clinic with posters in the waiting rooms and are screening some people opportunistically in surgery. The clinic lasts the form of a single session weekly, after working hours, and will be enlarged next year. Each person is allotted 10 minutes with a nurse and 10 minutes with the physician. The cost has been estimated at 1.72 (10) per patient, including staff overtime pay and equipment. The nurse takes a personal and family history of heart disease, smoking, drinking and exercising habits, and measures height, weight, blood pressure, peak flow and urine for glucose, protein and blood. I check the cardiovascular system, and we take the opportunity to check to testicular and abdominal signs and update tetanus vaccination. Blood is taken for cholesterol levels. All attendances are logged in the patient's records and in an attendance and follow-up plan card index.

MANAGEMENT PROTOCOLS

People found to be at low risk are offered a further check in 5 years. Other management depends on the problems found.

Smokers are offered advice on how to give up, with, where indicated, the use of leaflets, Nicorette chewing gum and relaxation tapes or classes. Patients with a blood pressure of over 140/90 but under 160/100 in the clinic has two further readings taken over two months and treatment with drugs, weight reduction, reduction in alcohol intake or relaxation instituted.

Anyone with a cholesterol result of between 6.0mmol/l and 7.4mmol/l is offered an appointment with the nurse for dietary and alcohol advice aimed at increasing the polyunsaturated to saturated fat rate to about 2:5, fibre and unrefined carbohydrates are encouraged. If the patient is overweight, a reducing diet is instituted. If the initial cholesterol is over 7.5mmol/l, liver function, blood sugar and thyroid function are checked, and referral to a diettian or physician is offered. Follow-up cholesterols are done at 4 to 6 monthly intervals, depending on initial levels.

Generally speaking, we advise a maximum weekly alcohol intake of 20 units. In cases of hypertension, hyperlipidaemia or obesity, lower limits may be advised.

We also recommend a dietary adjustment if the body mass index exceeds 25kg/m2.

Any other problems detected are dealt with as indicated.

REFERENCES

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