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Guest Editorial

The decline in cardiovascular disease: there is still room for improvement

Hannu Vanhanen

In this issue is an interesting article about the trends in the incidence of acute myocardial infarction (MI) and stroke based on a 21-year follow-up of the Oslo Study in Norway (1). The study consists of over 16 000 men aged 40–49 years who participated in a cardiovascular screening programme in 1972 and 1973. Clinical endpoints were obtained from hospital records and mortality data from Statistics Norway. This cohort had a lower mortality rate than the general Norwegian population. This healthy cohort effect is well known and was seen also in the Finnish Businessmen Study (2). Those people who are not interested in taking part in screening are those who would most benefit from screening and intervention. Similarly, people who are randomized to the placebo group in clinical trials are doing better than those who refuse to take part in the programme. During the follow-up the rate of MI was reduced in each age and birth cohort during the entire period. The reduction was greater in the old age group (60–64 years old) compared to the young 45- to 49-year-old age cohort. Similar findings have been reported from other Scandinavian countries (3) and from Finland.

According to FINAMI data (from the period 1983 to 1992) from Finland, coronary heart disease (CHD) mortality has been reduced by 7.1% yearly in men and by 5.9% in women (4). Particularly, re-infarctions have fallen by nearly 12% in men and by over 13% in women. The first MI has been reduced less than the mortality in the Finnish population. The proportion of the first MI was about two thirds of all infarcts. On the contrary, the 28-day mortality was only modestly reduced. It is noteworthy that about two thirds of those who died within 28 days had CHD. Thus, primary prevention and improvements in cardiopulmonary resuscitation are necessary tools for better results.

A modest reduction in the number of out-of-hospital CHD deaths reflects the importance of shortening the delay in treatment and cardiopulmonary resuscitation. Moreover, women are generally treated less aggressively than men (4, 5) and socio-economic inequalities are large in many countries (6).

In the Norwegian study the incidence of stroke decreased about 10 years after the initial screening. The rate differences were smaller than those for MI. One possible explanation for the delay in reduction of stroke rate compared to CHD may be the increased number of CHD survivors, who are at a greater risk of stroke. The risk of men with symptoms of cardiovascular disease (CVD) was between that of healthy men and men with established CVD or diabetes. In addition, strokes occur at a higher age than MI. Moreover, in hypertension trials of the 1980s and 1990s, strokes were more common endpoints than MI (7). While in older trials there were more MIs than strokes. One possible explanation may be that the participants have reduced serum cholesterol values more than before.

There was no evidence for reciprocal increase in non-fatal events following the decrease in fatal events. The results confirm the previous WHO Monica observations that changing coronary event incidence rate drives the decline in coronary mortality (8, 9). Thus, reduced mortality reflects the success of primary and secondary prevention. Although the study did not address reasons for possible changes of the declines in MI and stroke, the favourable changes in the classical risk factors are evident in Norway as well as in Finland (10). Experiences from Finland during 1979–1992 showed that about two thirds of the reduction of cardiac mortality is explained by favourable change in serum cholesterol, blood pressure and in the incidence of smoking. Of these, the change in cholesterol explained about 50% (10). After the mid-1980s the real reduction

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was more than calculated from the risk factor change indicating the effect of treatment. In the Scottish study during 1975–1994 treatment explained about 40% of the change (11). Changes in risk factor levels are expected to reduce the incidence mortality and case fatality.

CVDs are still the leading cause of death in western as well as increasingly in developing countries. Despite favourable trends in morbidity and mortality in some countries there are many countries where the trend is the opposite. Because of the ageing of western populations there are more heart disease patients alive than ever. Still, more than 50% of the deaths and disability from heart disease and strokes can be cut by a combination of national efforts and individual actions to reduce major risk factors like high blood pressure, high serum cholesterol, obesity, sedentary lifestyle and smoking according to the WHO declaration from October 2002. Most of the benefit can be achieved within 5 years of their implementation. Risk factors play a key role, even more important than has been thought (12–14). Intervention studies have shown that the reduction of systolic blood pressure by 20 mmHg will reduce stroke rate by over 40% and reduction of serum cholesterol by 10% at the age of 40 will reduce CHD deaths by 50% (12). It has been estimated that worldwide blood pressure alone explains about 50% of CVD and cholesterol about one third. Inactive lifestyle, tobacco use and low fruit and vegetable intake account for 20% each. Because risk factors may overlap their sum may exceed 100%. As a summary 75% of CVD can be attributed to the established risk factors both for men and women.

Because most people have suboptimal blood pressure or cholesterol levels it is important to shift the whole distribution of risk factors towards lower levels by population-wide interventions. Those at elevated risk, e.g. based on the risk SCORE evaluation by the new European guidelines (15) of CVDs, achieve drug treatment for risk reduction. It is important to realize that there are no thresholds for harm for blood pressure or cholesterol. The lower the better fits for both risk factors, unless the values are extremely low. Therefore, treatment goals are important as well. It is of great importance that the medical community continues to recognize high-risk individuals as is outlined in the new European guidelines. Average values may be biologically too high for the person with clustering of risk factors. Diet with reduced intake of salt and saturated fat, daily exercise and smoking cessation (avoiding smoking) are the key factors behind favourable changes in several risk factors not only cholesterol or blood pressure, but insulin resistance and inflammation markers will reduce as well.

CVDs not only cause premature deaths and disability but cause an economical burden on society. Obesity related increase in type 2 diabetes may worsen the figures significantly. Thus, it is not surprising that collaboration of the European Society of Cardiology and the Council of European Union called for specific actions in Heart Plan for Europe during the presidency of the Spanish Ministry. Among the objectives were reduction of serum cholesterol in individuals to 5 mmol/l by 2007, achievement of a blood pressure level of less than 140/90 mmHg in individuals under 65 years of age and the reduction of the prevalence of smokers in Europe by 1% per year. This process continues under the Irish presidency at the highest political level in Europe. The mission of the European Society of Cardiology is to improve the quality of life in the European population by reducing the impact of CVDs by reducing deaths by 40% in people under 65 years of age by 2020.

Reduction of salt and saturated fat (combined with trans fatty acids) intakes is not possible without a successful collaboration with the food industry. Educating consumers to be more health conscious may direct both industry and the sale and marketing of healthy alternatives. Nutrition labelling is a good tool for a consumer helping her/him to select good choices. On the other hand, controlling the advertisement of non-drug herbal and related products may be necessary.

As shown in the EUROASPIRE survey there is much room to improve the results of secondary prevention (16). The increasing rates of obesity and diabetes among heart patients imply that primary prevention should be done better. There are challenges also in acute treatments so that the time delay for coronary angiography will not exceed 48 h for MIs or those acute coronary syndrome patients who are at high risk and thus will need intervention. It is important to reduce the delay from onset of symptoms to treatment or hospital. Therefore, information campaigns about the symptoms of CHD or stroke for the public are necessary. The emergency cardiovascular care is a critical step in the chain of treatment.

I hope that we all understand that there is much to do at several levels in reducing the burden of CVD for humans and for society. Primary and secondary prevention are the most cost-effective ways.

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