South Asians and coronary heart disease: always bad news?

Latest data from the 2001 UK Census noted that, although coronary mortality fell among all migrants, rate ratios for coronary mortality remain higher for men and women of south Asian origin.[1] Ethnic inequalities in coronary heart disease (CHD) therefore continue to exist and justify the significant and commendable efforts of the UK's National Health Service (NHS) to address these inequalities.

Ethnic disparities in CHD mortality continue to be reported from around the globe. Sheth *et al* reported on cardiovascular mortality among Canadians of European, south Asian, or Chinese origin from 1979 to 1993.[2] In their analysis of 1.2 million deaths, rates of death from ischaemic heart disease were highest among Canadians of south Asian origin, whereas those of Chinese origin had a substantially lower rate.

Before we discuss the causes of ethnic disparities in CHD, one must be cognisant of the fact that south Asians are a heterogeneous group and therefore important differences do exist between specific ethnic groups, not only in disease outcomes but also risk factor profiles too. These differences are too extensive to be addressed in this short summary but more detailed accounts are accessible elsewhere.[3]

CHD RISK FACTORS AND ETHNICITY

It is well known that south Asians have substantially higher rates of diabetes, and this is often the risk factor most blamed for their higher CHD mortality.[4] In a prospective cohort study conducted of 828 south Asian and 27 962 non south Asian patients in the UK with insulin-treated diabetes, the standardised mortality ratio for south Asians diagnosed with diabetes before 30 years of age was 3.9 (95% CI = 2.0 to 6.9) in men and 10.1 (95% CI = 5.6 to 16.6) in women; in corresponding non south Asian men and women, the figures were 2.7 (95% CI = 2.6 to 2.9) and 4.0 (95% CI = 3.6 to 4.3) respectively.[5]

That diabetes mellitus may have a worse prognosis in south Asians for future adverse coronary outcomes and diabetes-related complications has been proposed by others,[6] with the finding that south Asian patients have poorer knowledge and understanding of diabetes[7] may play a significant role.

An innate predisposition from a young age,[8] superimposed with environmental and behavioural factors, precipitates insulin resistance, and this largely explains the high prevalence of type 2 diabetes in south Asians. In parallel, the prevalence of lower physical activity rates is higher in south Asian populations[9] and poses a challenge to improving overall health and wellbeing, both for primary and secondary prevention.

The prevalence of other conventional or so called 'classical' risk factors also differs by ethnic group, but prevalence is not necessarily higher in south Asian populations, with lower levels of total cholesterol and smoking prevalence than the white European majority population[10] and similar levels of hypertension.[11] Intuitively, this raises the potential for potency of risk factors or their interaction to differ in different ethnic groups.

While family history of premature cardiovascular disease is a complex risk factor to quantify and use in risk prediction, there is no doubt that south Asian patients, from Bangladeshis in London to Indians in the US, present with coronary disease at younger ages than white European patients,[12] age being the most important non-modifiable risk factor in the aetiology and prognosis of CHD from large population studies, such as the Framingham Heart Study and the World Health Organization MONICA (Multinational MONItoring of trends and determinants in CArdiovascular disease) Project.

Socio-environmental factors

The comparative prognosis of CHD in south Asian and white European patients may be affected by a range of factors that are not only biological but also social. Previous research has shown a clear social gradient in CHD outcomes, a higher socioeconomic status being associated with a lower coronary mortality,[13] and that living in an area of social deprivation influences aetiology and prognosis of coronary disease.[14] Deprivation *per se* is not a risk factor for CHD in south Asians but, as in the white European population, is a social determinant of risk factors. South Asian populations are more likely to live in areas with relative social and economic deprivation.[15]

Access to care

Studies reporting that south Asian patients have received inferior or inequitable clinical management suggest that this may be attributed to poor access secondary to geographical location, associated with the deprived areas that they live in.[16]

However, the relationship between social environment and minority ethnic group health is not necessarily a negative one in terms of access. Distance from hospital is a prognostic factor for all patients — in a study examining ambulance journeys to hospital of patients with potentially life-threatening conditions, increased distance from hospital was associated with increased risk of death (odds ratio 1.02 per kilometre; 95% CI = 1.01 to 1.03; $P<0.001$). This association was not changed by adjustment for confounding by age, sex, clinical category, or illness severity.[17] This is of relevance to prognostic analyses in CHD as minority ethnic groups in the UK tend to live closer to acute hospitals.[18]

It has long been recognised that access to coronary revascularisation services may, paradoxically, be increased

in deprived areas in the UK, probably as a result of their proximity to specialist cardiac centres, such as teaching hospitals.[19] Therefore, the issue of inequitable access to services is not simply one of inequitable provision, but an interplay of awareness, physical access, acceptability of services and, ultimately, acquisition of services.

CLINICAL MANAGEMENT

Primary prevention

The recently launched NHS Health Check programme defines ethnicity as a recordable item in the baseline minimum dataset, which in due course will provide valuable information on disparities. NHS Health Check is a highly commendable programme giving primary care an opportunity to target those at greatest risk of CHD and, consequently, shift towards a strategy to predict and prevent, rather than diagnose and treat for CHD. The introduction of pay for performance incentives in UK primary care has been shown to be associated with better and more equitable management of CHD across ethnic groups.[20]

Clinical care

Patient outcomes are tempered by variations in receipt of medical treatment, such as statins,[21] as well as access to hospital processes of care, such as angiography, and subsequent receipt of coronary revascularisation. Underuse of appropriate medical treatment in a particular ethnic group will potentially worsen their prognosis.

In patients with angina, those of south Asian origin have previously been reported to be less likely to undergo specialist investigation than those of white European origin.[22] This may not be solely explained by access to specialist services, as general practices with a higher proportion of south Asian patients have been reported as having higher rates of coronary angiography.[23] Furthermore, south Asians were more likely to seek immediate care for (hypothetical) angina symptoms than white European people[24] in a survey of attitudes to health seeking behaviour, and have been reported to have had more consultations with a GP in the year before coronary angiography than white European people.[22]

However, in more contemporary work in populations already selected for coronary angiography, as reported in the appropriateness of coronary revascularisation (ACRE) study in east London, south Asians were not inequitably managed in terms of prescription medication, although they were less likely to undergo coronary revascularisation.[22] However, those who were revascularised were likely to have less improvement of angina symptoms than white Europeans, although mortality rates did not differ by ethnicity.[25]

More recent studies using data from the 2001 Census and the Quality and Outcomes Framework suggest that medical therapy, such as statin therapy which plays an important role in improving prognosis[26] is, on the contrary, relatively more highly prescribed in south Asians and more deprived communities.[27]

IMPLICATIONS FOR PRACTICE

Although ethnic inequalities in CHD have existed for many decades and continue to exist, healthcare systems are now beginning to respond to these inequalities. Equitable access to care will drive more equitable prognosis when comparing ethnic groups, and recent data already show that this can contribute to the amelioration of previously observed ethnic inequities in outcomes.

From an incident risk perspective, however, a different potency is observed in south Asians compared to white Europeans. The increased predisposition to diabetes and continuing increased incidence of coronary disease in south Asians[28] continues to pose a significant challenge warranting not only prevention strategies to be robust, but also the need to be implemented truly at a population level, beginning with behavioural change early in life to modify risk. This is where primary care must focus to add a preventive armoury to already significant achievements in management of already-manifest disease.[29]

The continued presence of premature CHD at disproportionate rates in south Asians suggests there is still more to do. A strategy of addressing social determinants of CHD and implementing primary prevention equitably to complement high quality secondary prevention is needed. Primary care is well placed to rise to these challenges.

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