

Coronary artery disease in Indians

The special section (*Curr. Sci.*, 1998, 74, 1060-1096) addressed a rapidly emerging epidemic of non-communicable diseases. With infections on the downtrend due to a combination of medical and socio-economic factors, non-communicable diseases are becoming dominant in developing countries such as India.

Asian Indians are now a focus of special interest in macrovascular disease research. They are prone to vascular disease at an earlier age, and are affected more virulently. But conventional risk factors such as generalized obesity, hypertension and dietary habits cannot easily explain the increased risk.

What then could be responsible for this virulence? Insulin resistance, abnormalities of Lp(a) levels and lower levels of physical activity in Asian Indians were postulated¹. The evidence is not unequivocal for any of these. Nor can they readily account for the high rates of diabetes mellitus in emigrant Indians².

It must be stressed that coronary artery disease (CAD) is not an isolated event. It is the end result of a host of risk factors, nature and nurture, known and unknown. What is important is that most of these are silent, and tend to increase with westernization, in terms of lifestyle attitudes and stresses. As a corollary, they can be corrected, prevented or at least altered.

Common sense suggests that healthy eating habits and healthy lifestyle maintenance protect against CAD. It is sobering that they did not, as shown in the Coronary Artery Disease in Asian Indian (CADI) Study³. However, we must still ensure that risk factors are prevented and corrected (especially smoking, sedentary lifestyle, high blood pressure), without sliding down to therapeutic nihilism.

Reaven popularized the concept of metabolic syndrome-X, comprising of dyslipidemia, hypertension, coronary artery disease, glucose intolerance and insulin resistance⁴. Asian Indians are prone to adult onset diabetes mellitus (type 2 diabetes), and are projected to be among the largest ethnic group early in the next century⁵.

A hypothesis to explain pathogenesis

of CAD in Asian Indians was proposed: genetic susceptibility, perhaps with anomalies of lipoprotein (a), along with lifestyle alterations, lead to insulin resistance, abdominal fat deposition, hyperinsulinemia and high prevalence of diabetes mellitus. These in turn are associated with increased thrombotic tendency, with elevated levels of plasminogen activator inhibitor-1 and decreased tissue plasminogen activator, ultimately leading to excess CAD⁶. These common non-communicable diseases demand time, effort and expense in management from the individual, the physician and the social system⁷. A small proportion of individuals are identified, and a much smaller proportion present to medical attention.

I looked at the prevalence of potentially modifiable risk factors in a cohort of individuals with diabetes mellitus from our computerized database. Between December 1992 and July 1998, there were 8959 registered individuals with the diagnosis of diabetes mellitus (5638 males, 3321 females). Nearly a fourth of them were known hypertensives and 5% had known ischaemic heart disease. About 20% men were current smokers. Not surprisingly about 50% of men and 90% of women were sedentary (Table 1).

Even though the risk factors alone may not explain adverse events, it is essential we attempt to correct them. Impaired glucose tolerance is a biochemical diagnosis, with a proportion of individuals progressing to frank diabetes. In an earlier study on impaired glucose tolerance (IGT), we showed that modifiable risk factors such as hypertension, smoking, alcohol use and sedentary habits were equally common in individuals with IGT and with age and sex matched newly diagnosed diabetics⁸. Implying again that healthy lifestyle must be maintained in this group of 'pre-diabetic' individuals.

It was hypothesized that stress could be the underlying factor in the development of a cluster of metabolic abnormalities, leading to central obesity and other components of 'syndrome-X'⁹. Published studies have shown that yoga resulted in improved glycemic control in individuals with diabetes mellitus¹⁰.

Table 1. Prevalence of risk factors in diabetes mellitus ($n = 8959$)

Male-female	5638(M)-3321(F)
Known hypertension	2073 (23.14%)
Known CAD	397 (4.43%)
Current smokers (men)	1264 (22.4%)
Sedentary: men	2572 (45.6%)
women	2986 (89.9%)

In conclusion, non-communicable diseases are beginning to catch up with infectious diseases in Asian Indians. CAD and diabetes mellitus occur earlier and in a more virulent form compared to the West. The prevalence of conventional risk factors alone cannot account for this anomaly. Yet, lifestyle modifications, identification and correction of hypertension must not be lost sight of. Finally stress-relieving activities, show-cased by yoga and related techniques could offer additional measures to improve mental and thereby physical health.

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