

Diabetes Mellitus In South Indians

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INTRODUCTION

Studies on migrant Indians the world over have highlighted a high prevalence of diabetes mellitus compared to other population groups living in their new countries of adoption or to Indians living in India itself (1-9).

South African Indians also represent a migrant Indian group, being descendants of people who migrated from the Indian subcontinent from 1860 to 1911. Hence the present population have all been born in South Africa and represent 3rd, 4th, 5th, or 6th generation Indians. Today there are over 900,000 Indians residing in South Africa with 60 percent being concentrated in the greater Durban area. On the basis of their home language the majority can be divided into South Indians (Tamil and Telugu speaking) whose origins can be traced back to South India and North Indians (Hindi, Gujrati and Urdu speaking) who originate from North India (10). The South African Indian population is comprised of two thirds South Indian and one third North Indian.

Epidemiological studies done over two decades ago had been shown a high prevalence of diabetes mellitus in this population group (11-13). All such data, however, were documented long before the revised diagnostic criteria laid down by the World Health Organisation (WHO) (14) Expert Committee on diabetes mellitus and suffered from major shortcomings in terms of methodology and sampling procedure.

A recent study based on the revised WHO criteria and involving glucose tolerance tests on 860 South African Indians living in a suburb of Durban found a 11.1% prevalence of diabetes mellitus (4). Since then a much larger study covering all the suburb of the greater Durban area has been completed. The number of participants were just under 2500.

The overall prevalence of diabetes mellitus was 9.8% being more common in females (10.6%) than males (8.6%). There was no difference in the prevalence rate of the disease between those of North Indian origin and those of South Indian origin.

The prevalence of Impaired Glucose Tolerance (IGT) was 5.8% with the entity being more common in males (7.6%) compared to females (4.5%) of interest is that other population groups with a high prevalence of diabetes, e.g., Pima Indians and Micronesians, also show a lower prevalence of IGT.

PATTERNS OF DIABETES MELLITUS

Non insulin dependent diabetes (NIDDM) is by far the more common type of diabetes seen. In fact almost 98 percent of the diabetic subjects found in large study quoted had NIDDM. Previously it has been shown that insulin dependent diabetes mellitus (IDDM) is rare in South African Indians even in the young, in whom NIDDM is more common (17). In that study almost 70 percent diabetic subjects (age of onset under 35 years) had NIDDM (17). Moreover, malnutrition-related diabetes mellitus (MRDM) was extremely rare, being found in only 2 percent of the young diabetic subjects.

NIDDM in the young (NIDDY) in South African Indians is similar to the NIDDM seen in older age groups in terms of the high prevalence of obesity, propensity for vascular complications and familial predisposition (17).

PATHOGENESIS OF DIABETES MELLITUS

The reason for the high prevalence of diabetes mellitus in South African Indians remains obscure, as to date no environmental factor has been definitely implicated. Suffice it to say that with its attendant change in life style somehow has put this and other migrant Indian groups at an increased risk for developing diabetes (1).

A possible aetiological factor is obesity as it has been found that almost 50 percent of South African Indian diabetic subjects are obese (4). In fact obesity was more frequently seen in female diabetic subjects and could account for the higher prevalence of the disease in this sex group.

Based on a high familial aggregation of NIDDM, it is apparent that genetic factors play a role in the pathogenesis of the disease. However, the precise mechanism remains elusive. In the large study

done in Durban almost two thirds of NIDDM subjects gave a positive family history of the disease involving a first degree relative. Of interest is that in obese diabetic subjects a positive family history was more common than in the non-obese with the disease. This would suggest that there is an interplay genetic factors and obesity in unmasking the diabetic state.

Since migration from Indian to South Africa had virtually ceased after 1911 and since miscegenation with other South African population groups has been virtually non-existent, it does seem that the putative gene has been concentrated over a period of time as a result of in breeding. Studies are in progress to elucidate the precise nature of the abnormal gene. There does seem to be an relationship with HLABW61, but the association is a weak one (18).

As regards the pathogenesis of IDDM. Autoimmunity as well as HLA B8 and DR3 are important, as has been found in most other population groups (19,20). A surprising finding is the high prevalence of NIDDM in first degree relatives of subjects with IDDM; this may suggest that the gene for NIDDM somehow also predisposes to IDDM in South African Indians.

COMPLICATIONS

It has been suggested that migrant Indians are at greater risk for developing complications of diabetes compared to other populations groups (2). Recent studies done in South African Indians do lend support to this hypothesis. An indepth study involving diabetic patients attending a primary health care centre found the prevalence of retinopathy to be 44 percent and of nephropathy 27 percent (22). Similar rates have been shown even in NIDDM of the young (23). A field study carried out in Durban showed that diabetes mellitus was an important risk factor for the high prevalence of ischaemic heart disease in Indians (24).

CONCLUSION

This review has highlighted the high prevalence of diabetes mellitus in South African Indians, a migrant Indian group with obesity possibly playing some aetiological role. In addition, a high prevalence of vascular complications is seen. The disease has therefore become a major public health problem requiring research into its precise

aetiology in order to undertake possible preventive measures.

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