

Is Peripheral Vascular Disease Less Common in Indians?

G. Premalatha, V. Mohan

NIDDM in South Indians shows certain special features in comparison to European populations. They include a high prevalence of diabetes, a lower age of onset of diabetes - and a high prevalence of coronary artery disease. There is very little data regarding Peripheral Vascular Disease (PVD) although there are some suggestions that PVD is less common among migrant Indians [1, 2]. Nicholl et al [2] reported on the vascular complications in Asian and European diabetics, although the study was a purely clinical one. In the age group of 20-64 years, one or both dorsalis pedis pulses were absent in more Europeans (14%) than Asians (7%) ($P < 0.001$). Similarly one or both posterior tibial pulses were absent in more Europeans (29%) than Asians (16%) ($P < 0.001$). In a recent study we [3] have reported on a study of peripheral vascular disease based on doppler studies on a large series of NIDDM patients seen at our centre at Madras.

The study group comprised of 4941 consecutive NIDDM patients attending our centre, who underwent comprehensive diabetic checkup which included a detailed doppler study. The ankle brachial (A/B) index was calculated in all cases. An A/B index of < 0.8 was considered to be diagnostic of PVD. The overall prevalence of PVD among our patients was low (3.9%). The prevalence of PVD in our series in comparison with other studies [4-9] is shown in Table 1.

Table 1
Prevalence of PVD

Author and Year	Country	Prevalence Rate%	Reference Number
Migdalis et (1992)	Greece	44.0	4
Marinelli et al (1979)	U.S.A.	33.0	5
Walters et al (1192)	U.K.	23.5	6
Bhuripanyo et al (1992)	Thailand	21.3	7
Janka et al (1980)	Germany	16.0	8
De Silva et al (1993)	Sri Lanka	5.6	9
Mohan et al (1995)	South India	3.9	3

It is clear that prevalence of PVD among Indians and Sri Lankans is considerably lower as compared to European studies.

The prevalence of peripheral vascular disease increases with the duration of diabetes. The cumulative incidence of PVD in our study in

comparison with a similar study at the Mayo clinic [10] is shown in Table 2.

Table 2
Prevalence of IHD in Relation to Duration of Diabetes

Author and Year	PVD Prevalence			Reference Number
	At Diagnosis of Diabetes	After 10 years' Duration of Diabetes	After >20 years' Duration of Diabetes	
Palumbo et al (1985)	8%	15%	42%	(10)
Mohan et al (1995)	2%	4%	8%	(3)

It is interesting that at each point of time, the prevalence of PVD was much higher among Europeans compared to Indians. The University Group Diabetes Study [11] predicted the 13 year cumulative risk for developing intermittent claudication to be 38% and 24% respectively in males and females.

In our experience, use of doppler studies increases the sensitivity for diagnosis of PVD. If we had used clinical methods alone, only 41.7% of males and 35.9% of females would have been diagnosed to have PVD. Thus for diagnosis of PVD, doppler studies are extremely useful. However in about 5-10% of the patients, the A/B index may be artificially high due to medial wall calcification.

The majority of our patients in our study had only mild to moderate PVD and severe PVD was uncommon. The occurrence of both, major amputations (above ankle amputations) and minor amputations (below ankle amputations) were more common among patients with peripheral vascular disease.

Risk Factors for PVD

Multiple logistic regression analysis was done to find out the risk factors, using PVD as the dependent variable. Duration of diabetes mellitus, serum cholesterol, serum creatinine, systolic blood pressure and ischaemic heart disease showed a positive association with PVD. Surprisingly, smoking did not come out as a statistically significant risk factor. This may be due to the small numbers of PVD patients or alternatively, because the smoking history was unreliable. It is well known that smokers rarely disclose their true smoking status.

From M.V. Diabetes Specialities Centre, Royapettah, Madras-600 014.

The prevalence of retinopathy, both background diabetic retinopathy and proliferative retinopathy were higher in our PVD patients. This is probably a function of the duration of diabetes, as the duration of diabetes was higher in PVD patients (14 ± 8 years) as compared to non-PVD patients (9.4 ± 7 years, $P < 0.001$). As expected, the prevalence of ischaemic heart disease was more common in PVD patients. Though both PVD and IHD are macrovascular complications of diabetes, it is difficult at this point of time to explain why PVD is less common and IHD is more common in Indians and future studies should obviously address this issue.

REFERENCES

1. Jialal L, Welsh NH, Joubert SM, Rajput MC. Vascular complications in non insulin dependent diabetes of the young. *S Afr Med J* 1982; 62 : 155-7.
2. Nicholl CG, Levy JC, Mohan V, Rao PV, Mather HM. Asian diabetes in Britain: a clinical profile. *Diab Med* 1986; 3 : 257-60.
3. Mohan V, Premalatha G, Sastry NG. Peripheral vascular disease in non insulin dependent diabetes mellitus in South India. *Diab Res Clin Pract* 1995.
4. Migdalis IN, Kourti A, Zachariadis D, Samartzis M. Peripheral vascular disease in newly diagnosed non insulin dependent diabetics. *Int Angiol* 1992; 11 : 230-2.
5. Marinelli Mr, Beach KW, Glass MJ et al. Non-invasive testing vs. clinical evaluation of arterial disease: a prospective study. *J Am Med Assoc* 1979; 241 : 2031.
6. Walters DP, Gatling W, Mullee MA, Hill RD. The prevalence, detection and epidemiological correlates of peripheral vascular disease: a comparison of diabetic and non-diabetic subjects in an English community. *Diab Med* 1992; 9 : 710-5.
7. Bhuripanyo P, Graisopa S, Suwanwatana C, Prasartkaew S, Kiatsayompoo S, Bhurianyoo K, Wangsai W. Vascular complications in non insulin dependent diabetes mellitus (NIDDM). *J Med Assoc Thailand* 1992; 10 : 570-7.
8. Janka HU, Standl E, Mehnert H. Peripheral vascular disease in diabetes mellitus and its relation to cardiovascular risk factors: screening with doppler ultrasonic technique. *Diabetes Care* 1980; 3 : 207.
9. De'Silva D. The prevalence of macrovascular disease and lipid abnormalities amongst diabetic patients in Sri Lanka. *Postgrad Med J* 1993; 69 : 557-61.
10. Palumbo PJ, Melton LJ. Peripheral vascular disease and diabetes. IN: Harris MI, Hamman RF. eds. *Diabetes in America*. National Institutes of Health. Bethesda 1985; 1-21.
11. University Group Diabetes Program. A study of effects of hypoglycaemic agents on vascular complications in patients with adult - onset diabetes: design methods and baseline results. *Diabetes* 1970; 19 : 747.