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Increased Incidence of Peripheral Artery Disease in South-Asian Individuals: A Prospective Study of the UK Biobank

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Background: Peripheral artery disease (PAD) affects an estimated 230 million people worldwide and is associated with amputation, cardiovascular events, and mortality. South Asians are known to have an adverse cardiovascular risk profile, with higher rates of diabetes, hypertension, and ASCVD compared with Europeans. Prior, meta-analyses have reported lower PAD prevalence in South Asians relative to White Europeans and the mechanism underlying this discrepancy remains unclear. Whether this relationship persists after accounting for risk-factor burden has not been systematically assessed.

Methods: We studied UKB participants without prevalent PAD at baseline. Ethnic groups were defined as South Asian (Indian, Pakistani, Bangladeshi, or other South Asian background) or White European (British, Irish, or other white background). Incident PAD was ascertained via ≥1 procedural or diagnostic code. Cox proportional hazards models adjusted for age and sex estimated PAD risk in South Asian versus White European participants. Attenuation of the ethnicity-PAD association was examined by sequentially adjusting for hypertension, metabolic syndrome, PRS-PAD, diabetes, smoking, and additional cardiometabolic and lipid factors, ordered by descending population attributable fraction (PAF).

Results: Compared with White Europeans (n=468,337), South Asians (n=8,654) were younger and more often male, with a higher burden of diabetes (7.7% vs 1.9%), metabolic syndrome (42.6% vs 22.5%), and chronic kidney disease (2.5% vs 1.9%). Incident PAD was identical between groups (1.6% vs 1.6%). However, after adjustment for age and sex, South Asians had significantly higher PAD risk than Europeans (HR 1.25, 95% CI 1.05–1.48, p=0.010). This risk was concentrated in men (HR 1.35, 95% CI 1.11–1.63) and in participants aged 50–60 years (HR 1.61, 95% CI 1.21–2.14). Among the different South Asian ethnicities, Bangladeshi participants had markedly elevated risk (HR 3.91, 95% CI 2.03–7.51). The overall excess risk was substantially attenuated after adjustment for metabolic syndrome (HR 1.10, 95% CI 0.93–1.31) and was fully attenuated to the null after sequential adjustment for diabetes (HR range 1.00–1.02).

Conclusion: South Asians had significantly higher PAD risk than Europeans in the UKB potentially explained by comorbid diabetes and downstream cardiometabolic risk factors.