The Role of Inflammation in Predisposition to Cardiovascular Disease Risk in South Asians: A Comparison of Populations in Scotland and Singapore

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It is now well established that atherosclerosis is an inflammatory disease with a broad array of inflammatory cells and pathways implicated at every stage of the disease [1]. Acute and chronic inflammation are key factors in the development of endothelial damage [2,3]. As endothelial dysfunction is a validated biomarker for future cardiovascular events, closer study of the role of inflammation in early-stage endothelial dysfunction should be undertaken, particularly in high risk populations. Cardiovascular disease in South Asian populations is undoubtedly a major cause of morbidity and mortality. Recent evidence suggests that South Asians migrants living in the UK are highly susceptible to developing cardiovascular disease and experience 1.5 to 4 times higher coronary heart disease mortality compared with indigenous populations [4]. South Asians also exhibit greater central obesity and insulin resistance which, through promotion of low-grade chronic inflammation [5,6], could be associated with endothelial dysfunction. However, the role of inflammation in cardiovascular disease risk in South Asians has not been well explored, and in particular very little is known whether inflammation is a significant factor affecting endothelial function in South Asians living in different countries.

This project proposes to explore the role of inflammation in cardiovascular disease risk in South Asian populations living in Scotland (and comparing them with the indigenous Scottish population) and also looking at South Asians living in Singapore and comparing them with other ethnic groups in Singapore. For the first 2 years in Dundee, the project will explore the association between novel biomarkers of endothelial function (eg. flow-mediated dilatation, EndoPat, post skin occlusive reactive hyperaemia) and inflammatory markers in blood. In the subsequent 2 years in Singapore, the project will explore the relationship between blood borne markers of inflammation (eg. CRP, TNFα, NFkB) and blood borne biomarkers of endothelial dysfunction/activation (eg E-selectin, ICAM-1, PAI, tPA). This project will offer an opportunity to determine whether inflammation exerts similar effects on endothelial function in South Asians living in different environments. In addition, the project will offer training in state-of-the art techniques and biomarkers for assessing endothelial function in humans and a greater understanding of the mechanisms of early development of cardiovascular disease risk and its progression.

References