

Letter to the Editor

Tobacco Smoking as a Recognized Risk Factor for the Adverse Outcomes of the Renal Disease, Hemodialysis and Transplantation

Anil K Saxena

Post-graduate Department of Medicine, King Fahad Hospital, Hofuf, Saudi Arabia

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Dear Sir,

Global use of tobacco accounts for approximately three million deaths every year. About two third of these deaths occur in developed countries, notwithstanding the fact that their large scale efforts have contributed to a substantial decline in smoking among adults and adolescents^[1]. Based on the existing smoking patterns, the figure of tobacco smoking-related deaths is estimated to rise to 10 million per year over the next three decades. Tobacco smoking has a number of adverse effects on health, causing ischemic heart disease, chronic obstructive airway disease and cancers of respiratory and upper GI tract, pancreas, kidney and urinary tract^[2]. In addition, tobacco smoking is currently a recognized risk factor for the adverse outcomes of essential hypertension, diabetic glomerulopathy, primary renal diseases, hemodialysis and transplantation. Transient, acute rise in systolic blood pressure reaching 20 mm Hg in healthy and hypertensive subjects, as well as in patients with type-2 diabetes mellitus or primary renal disease, has been observed among smokers. Ritz et al^[3] confirmed that smoking increased renovascular resistance that led to a significant fall in glomerular filtration rate, filtration fraction and renal plasma blood flow. The likely consequences of these renal hemodynamic effects are intermittent spells of glomerular hypertension, as is also suggested by acute increase in urinary albumin / creatinine ratio. Dales et al^[4] noted that proteinuria was more common in smokers and more pronounced in heavy as compared to light smokers. In addition, hematuria tended to be more prevalent among smokers. Hypertension associated nephropathy is mediated by nephrosclerosis as smoking damages arterioles; progressive vascular injury is a likely

mechanism for progressive renal decline attributable to smoking.

Smoking is strongly associated with the development, progression and mortality of diabetic glomerulopathy^[5]. It is an independent risk factor for the development of microalbuminuria. Its continuous use also leads to earlier, as well as progressive decline in creatinine clearance in patients with diabetic nephropathy. The risk of death from cardiovascular disease is a great deal higher in smokers with diabetic glomerulopathy and smokers requiring long-term hemodialysis than with nonsmokers^[6].

In IgA glomerulonephritis and Autosomal dominant polycystic kidney disease, a retrospective multicenter case-controlled study demonstrated dose-dependent association with progression to end stage renal disease (ESRD). Stengel et al^[7] observed a clinical dose-effect relationship between smoking and CRF among men with primary glomerular nephropathy: membranous nephropathy, IgA nephropathy, minimal change disease, and focal segmental glomerulosclerosis. The relationship was stronger in at-risk groups of men in their fourth decade and/or hypertensives. Cigarette smoking and hydrocarbon solvents have an effect on the rate of pulmonary hemorrhage in anti-glomerular basement membrane (anti-GBM) disease, as it increases lung capillary permeability, and thus enables the anti-GBM antibodies to reach basement membrane. Smoking also alters the antigenic determinant of glomerular basement membrane, triggering autoantibody production. Schiffel et al, reported that cessation of smoking slows the accelerated progression of renal failure in primary renal disease but did not reverse the loss of renal

Address correspondence to:

Anil K. Saxena, MD; MRCP, Nephrology Division, Post-graduate Department of Medicine, King Fahad Hospital, Hofuf, Al-Hasa-31982, Saudi Arabia. Tel.: 00966-3-5756125; Fax: 00966-3-5754094; E-mail: dranil_31982@yahoo.com

function induced by smoking. Smoking is an adverse prognostic risk factor as well, for diabetic nephropathy^[8].

A higher peroxidative state is present in HD smokers due to cigarette smoking and dialyzer membranes, especially cellulose derived ones, induce oxidative damage to blood vessels^[9].

Tobacco smoking, at the time of transplantation is associated with increased graft failures. Both reduced graft and patient survival associated with heavy smoking are less obvious in the patients who stopped smoking five years before transplantation^[10]. These results imply that patients should be educated regarding the ill effects of smoking, in order for them to quit before transplantation. Nevertheless, all physicians caring for renal patients should make determined efforts to convince their patients to stop smoking because it is a powerful risk factor for the decline in renal function.

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