Diabetic and Hypertensive Nephropathy in India

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Hypertension and Diabetes Mellitus; are now recognized as two most important “Life Style Diseases” commonly encountered in the community. Both these are very closely related to Chronic Kidney Disease (CKD); which goes unrecognized most of the times. Indian CKD registry established under the aegis of Indian Society of Nephrology; has been collecting data and has reported on 38,193 patients collected from 154 centers; to include 38 centers from Indian Society of Pediatric Nephrology. It has made pertinent observations. It has reported that Diabetes mellitus as the cause of cKD was found in 31.2% of patients. As CKD stages progressed cardiovascular events in individual with Diabetes and Chronic Kidney Disease.

In recent fearless forecast for JNC 8; the triad of hypertension; Diabetes Mellitus and Chronic Kidney Disease have been emphasized and grouped; so as to enable making combined efforts for their preventive management. We in India have to pay attention to this aspect right from starting at the community level for effective prevention. Several such studies are available from different parts of the country. Amongst the recent one’s, the Chennai urban Rural Epidemiological study (CURES – part I 2003) conducted by V. Mohan from Madras Diabetic Research Foundation which covered 50,000 subjects revealed that 16% of the subject above the age of 20 Years were affected by Diabetes and 23% of the survey population had hypertension. Study of M.K. Mani from Chennai done in a Hamlet of rural population covering 21,062 subjects detected hypertension in 5.26% and Diabetes in 3.64% and done in a hamlet of rural population covering 21,062 subjects revealed a high prevalence of CKD (17.4%). In this study CKD prevalence was urban 25.5 v/s 9.4% in rural settings. Here too Diabetes and Hypertension were main causes of CKD.

In diabetic subjects hypertension per se inhibits endothelial derived relaxation and stimulates gene transcription for the growth factor; acting on vascular smooth muscle cells. Hyperinsulinemia seen in types II diabetes causes and aggregates hypertension in a number of ways. These include increased platelet adhesions and aggregation; and an imbalance between coagulation and fibrinolytic activity leading to pro-coagulant state; endothelial dysfunction; lipoprotein abnormality and vascular smooth muscle alteration. About 20.40% of subject with type II DM may develop frank nephropathy over the years; as manifested by macroproteinuria. However microalbuminuria is the earliest manifestation of nephropathy. From these transitional phases Blood pressure steadily and progressively starts rising. By the time gross proteinuria develops, almost all patients with type II DM develop hypertension. In an article published in this issue of the journal by Navneet Agarwal etal, have studied 300 newly diagnosed type II diabetes taking microalbuminuria in 2 samples over 6months period as early evidence of nephropathy. They have found an incidence of 17.5% of nephropathy and have reported hypertension as the most important associated factor contributing to development of nephropathy.

In a situation where both Diabetes and Hypertension are combined; one sees both “Arterial Intimal Calcification” (AIC) which occurs in atherosclerotic plaques and “Arterial Medial Calcification” (AMC) which is a non occlusive condition with its hemodynamic effect. AMC is seen in young and middle aged people and is closely associated with CKD-Mineral Bone Disease (CKD-MBD). AIC on the other hand is associated with atherosclerotic plaques in Diabetes and in older patient. In most patients with nephropathy (CKD); both these get combined, leading to difficulty in diagnosis with its consequent dilemma’s in management.

References

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