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**Effect of N-acetylcysteine on Oxidative stress, endothelial dysfunction and carotid artery intimal thickness in chronic peritoneal dialysis patients****Mitul Bora**

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**Background:** Cardiovascular disease (CVD) is the leading cause of death in the general population and a major cause of morbidity and mortality in chronic kidney disease (CKD) and end stage renal disease (ESRD) patients. The high prevalence of CVD in incident dialysis populations suggests that CVD begins during or before the stage of chronic renal insufficiency. However the cause of the increased in the CVD in patients of CKD including those who are on dialysis is not explained by the traditional risk factors alone. Various non-traditional factors such as hyperhomocysteinemia, hyperparathyroidism, inflammation (indirectly measured with highly selective CRP), acute phase reactants (albumin and fibrinogen), oxidative stress and endothelial dysfunction have all been proposed for this increased incidence of CVD. In fact oxidative stress, endothelial dysfunction, and inflammation represent a key triad serving as the foundation for the development and progression of atherosclerosis. Chronic kidney disease patients, peritoneal and haemodialysis patients, as well as renal transplant patients all show an equal susceptibility in oxidative stress, indicative of a higher degree of inflammatory activity in these patients. N – acetylcysteine (NAC) serves as an antioxidant by virtue of its interaction with reactive oxygen species. The drug acts on atherosclerosis through several mechanisms including decreased apoptosis, vasoconstriction and endothelial dysfunction.

**Aim and objectives:** To evaluate the oxidative stress, carotid intima media thickness in CKD, dialysis and renal transplant patients and their response to antioxidant therapy.

**Method:** The study was conducted in the department of Nephrology of All India Institute of Medical Sciences, New Delhi, India. All patients who are above 18 years of age were included in the study. Those who were smokers, had recent episodes of peritonitis (within 6 weeks of the study), on antioxidants and those having malignancy, autoimmune disease, chronic liver disease, active infection, and known hypersensitivity to NAC were excluded from the study.

The study was approved by the institutional ethical committee. Informed written consent was taken from each and every patient. Detailed demographic profile, cause of ESRD, duration and frequency of dialysis, co-morbidities, duration of renal transplant, baseline parameters including serum homocysteine, C-reactive protein were measured in all the subjects. Special Biochemical tests in relation to evaluate the oxidative stress and antioxidants were done in all patients. These are lipid peroxidation products, malondialdehyde (MDA), total antioxidant capacity (TAC), lipid profile, highly sensitive C reactive proteins (hsCRP) Homocysteine level. All patients underwent Doppler studies to assess endothelial function by the flow mediated dilatation (FMD) of the brachial artery and carotid intima media thickness (CIMT). N-acetylcysteine was given in the dose of 1200 mg in two divided doses for three months period to all enrolled patients. The markers of Oxidative stress, CIMT, endothelial dysfunction and inflammatory markers were repeated in all patients after three months therapy with NAC.

**Conclusion:** All CKD patients have endothelial function abnormality, elevated oxidative stress and low serum antioxidant level which lead to early and progressive atherosclerosis and ultimately lead to increased cardiovascular events. N-acetylcysteine is an antioxidant which after giving for three consecutive months significantly reduces the oxidative stress, CIMT, and other inflammatory markers (hsCRP, Homocysteine) in these patients.

**Biography**

Mitul Bora has completed his M.B.B.S (Final) in 1998 And M.D (Internal Medicine) in 2004 from Assam Medical College, Dibrugarh, Assam, India. His is a Senior Residency (Nephrology) in Sanjay Gandhi Post Graduate Institute of Medical Sciences (S.G.P.G.I.M.S) Lucknow, Uttar Pradesh from 03.08.2005 to 21.07.2007. M (Nephrology) in 2011 from All India Institute of Medical Sciences (AIIMS) New Delhi, India. Currently he is working as Consultant Nephrologist at International hospital, Guwahati, Assam, India since 02/03/2012

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