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Role of endothelial progenitor cells (EPCS) in early senescence in coronary artery disease

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Coronary artery disease (CAD) resulting myocardial infarction is number one killer in the world and prevalence of this disease is also increasing in the developing countries. The treatment in the form of drugs, arterial stenting and bypass surgery is costing billions of dollars. It has been observed that endothelial cells dysfunction plays an important role in causing the disease. Various risk factors like diabetes mellitus, obesity, hypertension and hypercholesterolemia and smoking have been identified in the epidemiological studies. Endothelial dysfunction results initially and finally leads to thrombosis which will result lack of blood supply to the heart. Studies have shown that endothelial progenitor cells (EPCS) are involved in angiogenesis by differentiating into mature endothelial cells and aids in the repair mechanism. There are limited studies reporting the reduced number of endothelial cells and early senescence in coronary artery disease. Our study grouped 25 subjects in the age group of less than 50 years who were suffering with coronary artery diseases. Circulating EPC'S (CD34+/CD133+) by flow cytometry have shown significant lower number in coronary artery disease patients. EPC/TL (Kb-Genoms) was also markedly lower in coronary artery disease patients. Compared to controls the mean EPC/TA (IU/cells) was lower compared to controls. In younger patients, lower EPC'S number and shorter EPC'S telomere length and reduced telomerase activity were observed. Future gene therapy focusing attention on telomere aspects will help, as the disease prevalence is increasing and resulting in increased mortality. New drugs to increase telomerase activity and increasing telomere length will be the future hope for longevity.

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