VITAMIN D SUPPLEMENT CAN PROVIDE BETTER LIFE FOR GERIATRICS

Vitamin D is considered now as a miracle due to new studies which proved wide action of vitamin D concerning many diseases which mainly related to geriatric period. Studies confirmed that geriatric stage of life was mainly associated with many diseases like type 2 diabetes mellitus, atherosclerosis, cerebral hemorrhage, Alzheimer, osteoporosis and many kinds of cancers as lung, prostate, urinary bladder cancers

Vitamin D is a steroid hormone formed inside the body with the help of Sun .Different actions of vitamin D depend mainly on presence of vitamin D receptor in the cytoplasm of target cells. Vitamin D receptor complex has wide action on cell function through mainly genomic action which affects many transcription factors involved in different roles. Scientists found that that vitamin D receptors are presented in many tissues not only in cells related to ca^{++} metabolism which made researchers search for hidden actions for vitamin D. Vitamin D was observed to be a potent antioxidant, anti inflammatory, anti microbial and immune system activator. All these actions support vitamin D to a prophylactic agent for common elderly related diseases

VITAMIN D AND OSTEOPOROSIS

The protective role of vitamin D towards osteoporosis is referred to that The main old action of vitamin D is concerning with bone metabolism through increasing the plasma levels of calcium and phosphorus, needing for mineralization.

VITAMIN D AND DIABETES

Studies have proved that vitamin D is necessary for normal insulin secretion [29,30].Vitamin D reduces insulin resistance through its effect on calcium and phosphorus metabolism and by up regulation of the insulin receptor gene [31]. When vitamin D increases calcium content of the cells, this can lead to increase glucose transport into the muscle [32]. Vitamin D can regulate nuclear peroxisome proliferative activated receptor (PPAR) that has an important link to insulin sensitivity [31]. Vitamin D can act on β cells of pancreas through binding of vitamin D receptors which is present on theses pancreatic β cells [33], 1α hydroxylase which is activated by vitamin D was found also to be expressed in β cells of langerhans [34]. Also presence of vitamin D response element in the insulin gene can allow vitamin D to regulate this gene [35], On the other hand active vitamin D increases transcription of insulin receptor genes [31]. From another view presence of vitamin D receptor in skeletal muscle; the main site for glucose uptake help in control blood glucose level. [36].Vitamin D was found to suppress the renin gene helping in reducing hyperglycemic effect on increasing renin levels in pancreatic β cells.

VITAMIN D AND ALZHEIMER'S

Vitamin D also has a protective effect of vitamin D against Alzheimer's disease as vitamin D has a great role in neuronal differentiation and maturation through regulation of the synthesis of neurotrophic agents such as nerve growth factor (NGF) and glial cell-line-derived neurotrophic factor (GDNF) [42]. This nerve growth factor is essential for the growth, maintenance, and survival of neurons and also has been involved in regulation of the normal function of the hippocampus, which is concerning with learning and memory,these functions were found to be highly disturbed in (AD). It has been found that mature NGF levels are decreased in the forebrain of aged animals and patients with AD. Vitamin D was involved also in neuroprotection against glutamate toxicity. Invitro cultured rat cortical neurons were protected from glutamate toxicity by vitamin D treatment, through the upregulation of VDR expression and antioxidant effects [43,44] including inhibition of the synthesis of inducible nitric oxide synthase [44–45] .Beside that studies found that a decreased level of VDR mRNA has been detected in hippocampal region Alzheimer's brain [46].

VITAMIN D AND CANCER

Many studies found an expected link between vitamin D and cancer risk, as vitamin D has been found to have several activities that might slow or prevent the development of cancer, including stimulating of cellular differentiation, decreasing cancer cell growth, and reducing tumor blood vessel formation (angiogenesis) (54-55).Multiple studies have shown that higher intake or blood levels of vitamin D are associated with a reduced risk of colorectal cancer (56-57)

VITAMIN D AND CARDIOVASCULAR DISEASES

Concerning effect of vitamin D on cardiovascular health, it can inhibit genes involved in producing renin, causing downregulating of the rennin angiotensin system [71]. Also it was found that hypovitaminosis of Vitamin D induces calcium deposition in vessels and soft tissues, leading to activation of RAA system [71]. Vitamin D receptors contributes in preserving the endothelial function of vascular muscle cells [71,72] by downregulating proinflammatory factors and upregulating anti-inflammatory factors, this help in reduction of atherogenesis.

Conclusion: From the above information we can expect that recommendation for vitamin D supplement for elderly people can protect them from different common diseases in this period of life and help them enjoy their life but many studies are to be done to detect optimum dose.

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Thank You