Study of relation between 25 Hydroxy Cholecalciferol & Cardiovascular Complications in Type2 Diabetic Patients on Chronic Hemodialysis Treatment

Thesis
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Lists of Abbreviations

1,25-(OH)2D3	1,25-Dihydroxyvitamin D3;
25(OH)D	25-hydroxyvitamin D
AC	arterial calcifications
ACE	Angiotensin converting enzyme
AF-1	activation function-1
ANP	Atrial natriuretic peptide
AP	activator protein
CAC	Coronary artery calcification
CD	cyclin-dependent
CKD	Chronic kidney disease
CRP	C-reactive protein
CT	Calcitonin
CV	cardiovascular
CVD	cardiovascular disease
DCs	dendritic cells
DHC	Dehydrocholesterol
DMMS	Dialysis Morbidity and Mortality Study
ESRD	End stage renal disease
Fig.	Figure
FMD	flow-mediated dilation
G.F.R	Glomerular filtration rate
GI	gastrointestina

GM-CSF	granulocyte-macrophage colony-stimulating factor
Hb	Hemoglobin
HbA_{1c}	hemoglobin A_{1c}
HD	Haemodialysis
HDL	high-density lipoprotein
HOPE	Heart Outcomes and Protection Study
HS	highly significant
IBDs	Inflammatory bowel diseases
IFN-γ	interferon
IL-6	interleukin- 6
INR	International normalization ratio
IR	Insulin resistance
K/DOQI	Kidney Disease Outcomes Quality Initiative
KO	KnoKout
LBD	ligand binding domain
LDL	low density lipoprotein
LURIC	LUdwigshafen RIsk and Cardiovascular Health
LV	left ventricular
LVH	left ventricular hypertrophy
MAP	Mean arterial pressure
MDRD	Modification of Diet in Renal Disease
MMP	Matrix metalloproteinases
NF	nuclear factor

NO	nitric oxide
NS	non significant
NSB	Non specific binding
OCT	oxa-calcitriol
PBMCs	peripheral blood mononuclear cells
PTH	parathyroid hormone
RA	Rheumatoid arthritis
RANKL	receptor activator of NF-_B ligand
RAS	Renin angiotensin system
RT	Right
RXR	Retinoid X receptor
S Bl.P	Systolic blood pressure
S.	Serum
SD	Standard deviation
Sig	statistically significant
SLE	Systemic lupus erythematosus
SNX	subtotal nephrectomy
SPACE	Secondary Prevention with Antioxidants of Cardiovascular Disease in End-Stage Renal Disease
Th2	T-helper cells
tHcy	High homocysteine
TIMP-1	tissue inhibitor of metalloproteinase
TNF	tumor necrosis factor
TNF-a	tumor necrosis factor (a)

UV	Ultra vilot
UVB	Ultra vilot beams
VDR	vitamin D receptor
VDREs	vitamin D3 response elements
VS	Versus
WHI	Women's Health Initiative
WT	wild type

Introduction

Cardiovascular disease is an important cause of mortality in patients undergoing maintenance dialysis, accounting for almost 50 percent of deaths ***(USRD, 2008).*** It is an important source of morbidity, as the annual probability of hospital admission for heart failure (HF) and/or myocardial ischemia is approximately 20 percent in these patients ***(Trespalacios and Taylor, 2003).***

A growing body of evidence suggests that vitamin D deficiency may adversely affect the cardiovascular system. The study showed that heart attack risk was doubled in people with 25 (OH) vitamin D levels <15 ng/ml vitamin D receptors have a broad tissue distribution that includes vascular smooth muscle, endothelium, and cardiomyocytes ***(Wang et al., 2008).***

Myocardium is an important target tissue for vitamin D-mediated effects on genomic and non-genomic levels ***(Nibbelink et al., 2007).***

Other experience also shows that vitamin D plays a crucial role in heart function vitamin D deficiency has been shown to diminish contractile function of heart muscle cells, contribute to endothelial dysfunction, and cause distortions in

heart muscle structure (triggering hypertrophy, or abnormal heart muscle growth); vitamin D deficiency also increases smooth muscle growth in the coronary artery wall a process that leads to atherosclerosic plaque formation ***(London GM et al., 2007).***

Vitamin D deficiency is associated with congestive heart failure ***(Zittermann A, 2006)***.

Vitamin D deficiency is associated with obesity ***(Arunabh et al., 2003)*****,** glucose intolerance ***(Hypponen E,and Power C, 2006),*** the metabolic syndrome, hypertension and dyslipidemia, which are all well-established CVD risk factors ***(Hintzpeter et al., 2007).***

The research done at the University of Chicago has determined that vitamin D deficiency increases blood pressure, while vitamin D supplementation significantly decreases systolic blood pressure ***(Pfeifer M et al., 2001).***

A new study suggests that Vitamin-D deficiency appears to be a risk factor for developing cardiovascular disease ***(Wang et al., 2008).***

The cardiovascular mortality is decreased in haemodialysis patients who took oral alfacalcidol at the clinical

dosage, suggesting that this treatment may improve the outcome of the patients ***(Shoji et al., 2002).***

25D was a better predictor of clinical events finding observed in ESRD extends to the predialysis phase. Our data indicate that 25D is a better risk marker than 1,25D in CKD ***(Wolf et al., 2007).***

25 (OH) D deficiency was considered to be of minor clinical consequence. Recent data, however, show that 25(OH) D levels independently correlate with parathyroid hormone (PTH) levels and administration of pharmacological doses of 25 (OH) D can suppress the parathyroid gland. The national Kidney Foundation's Kidney Disease Outcomes Quality Initiative (KDOQI) guidelines now recommend supplementation guided by regular measurement of 25 (OH) D levels in CKD patients ***(AL-ALY, et al., 2007).***