VALVULAR CALCIFICATION ON DIALYSIS PATIENTS

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By
Sherif Hassan Abdul Hamied
M.B.B.Ch. Faculty of Medicine
Ain Shams University

Supervised By

Prof. Dr. Mahmoud Abdul Fattah
Professor of Internal Medicine & Nephrology

Dr. Alaa Abdul Rahman
Ass. Professor of Internal Medicine & Nephrology

Dr. Mohamed Mahmoud Abdul Ghani
Lecture of Internal Medicine & Nephrology

Faculty of Medicine
Ain Shams University
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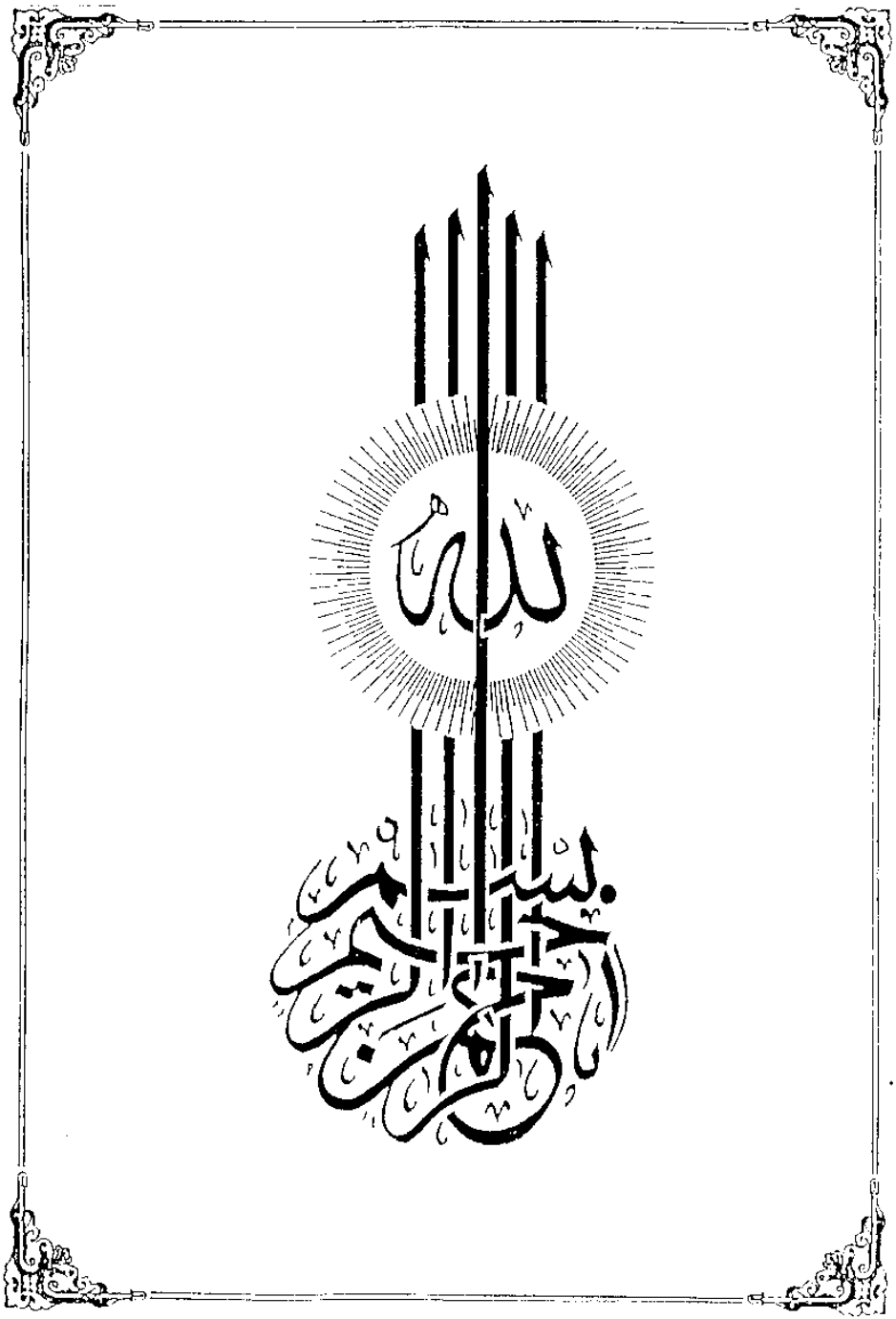

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INTRODUCTION

Cardiac valvular affection is an under-recognized complication of chronic uremia ***(Maher et al., 1987)***. Calcification of the mitral annulus was common in patient with chronic renal failure than in age matched controls ***(Fulkerson et al., 1979).***

Calcification of the mitral annulus can cause mitral regurgitation or stenosis or both and is also often associated with aortic valve calcification. Sever aortic valve calcification can cause aortic stenosis and aortic regurgitation ***(Lombard et al., 1987).***

Prospective echocardiographic study identified aortic valve calcification in 28 % and mitral calcification in 36 % of uremic patients ***(Maher et al., 1987).***

Furthermore, clinically significant valvular stenosis of tricuspid, aortic valve and less frequently of the mitral valve may occur. The cause of premature calcification in uremic patients of the mitral and aortic valves is uncertain, however, secondary hyperparathyrodism, hypertension and hypercholesterolaemia are thought to be essential risk factors ***(Meyer 1992).***

Case control studies have shown annular calcification in uremic patients with higher ionised calcium, phosphorus and CaxP product levels ***(Nestico et al, 1983),*** these findings suggest that vigorous attempts to normalise calcium-phosphorous metabolism may decrease the incidence of this complication in patients with renal failure.

AIM OF THE WORK

The aim of this study is to identify valvular heart disease in patients with chronic uremia on dialysis therapy by conventional and color coded Doppler echocardiography, and to find out its relations with parathormone level, lipid profile, calcium and phosphorus levels and hypertension as they considered the most important risk factors for valve calcification.

REVIEW OF LITERATURE

REVIEW OF LITERATURE

CARDIOVASCULAR MANIFESTATIONS OF PATIENTS WITH CHRONIC RENAL FAILURE ON DIALYSIS THERAPY

Hypertension :

Prevalence and significance of hypertension :

In patients undergoing dialysis, hypertension is a common problem that exerts a significant influence on morbidity and mortality.

Close to 80 % of patients entering a dialysis program have hypertension defined as a systolic pressure greater than 150 mm Hg or diastolic pressure greater than 90 mm Hg ***(Weidmann et al, 1983).*** In addition, once dialysis is begun, control of hypertension may be less than optimal. A recent study of cardiac risk factors in dialysis patients found 65 % of non-diabetic patients and 87 % of diabetic patients on dialysis had inadequate control of blood pressure ***(Ritz et al., 1985).***

The prevalence of hypertension in dialysis population varies with different etiologies of renal failure. Patients with tubulointerstitial disease have the lowest incidence of hypertension. In contrast, those with glomerulonephritis,

primary vascular disease (nephrosclerosis, systemic sclerosis, haemolytic uremic syndrome) or diabetic nephropathy have hypertension at rates approaching 90-100 % ***(Weidmann et al., 1975).***

Atherosclerosis with its cardiovascular complications remains the most common cause of death in the dialysis population, and hypertension remains the single most important risk factor ***(Linder et al., 1974).***

A study of dialysis patients with moderate to sever atherosclerosis showed that 90 % had hypertension ***(Vincenti et al., 1980).*** In patients younger than 40 years, atherosclerosis was found only in those having a history of hypertension. Not surprisingly, long-term survival while on dialysis is determined in a long part by control of hypertension ***(Charra et al., 1983).***

This is especially worrisome in light of the above mentioned low percentage of dialysis patients whose hypertension is well controlled ***(Green et al., 1983).***

The pathophysiology of uremic hypertension has been well characterized and consists primarily of :

A- An increase in total peripheral resistance due to an increase in extracellular volume ***(Vertes et al., 1983).***

B- Vasoconstriction due to the activity of the renin-angiotensin axis ***(Acosta et al., 1982).***

C- An endogenous toxin with digitalis-like activity in uremic patient may affect blood pressure by its action on sodium transport ***(Kelly et al., 1986).***

D- Impaired left ventricular function ***(Fernando et al., 1976),*** increased cardiac work ***(Mostert et al., 1970)*** and increased cardiac index ***(Goss et al., 1976).*** Persistence of hypertension in patients on dialysis is usually related to inadequate fluid removal ***(Weidmann et al., 1971).***

Atherosclerosis :

Lipoprotein abnormalities in uremia :

Hypertriglyceridemia with elevations of very low density. Lipoproteins (VLDL), is common in patients with chronic renal failure ***(Maschio, Oldrizzi, Rugiu, et al., 1989).***

A second abnormality in lipid metabolism, reduced concentration of high density lipoprotein (HDL) cholesterol has also been documented in chronic renal failure ***(Fuh et al.,***