ECHOCARDIOGRAPHIC ASSESSMENT OF CARDIAC DYSFUNCTION IN MAINTENANCE HEMODIALYSIS PATIENTS

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INTRODUCTION AND AIMS

The hemodialysis procedure may acutely induce regional left ventricular systolic dysfunction. The aim of this study was to evaluated the echocardiographic parameters in patients with end stage renal disease (ESRD) on hemodialysis and to correlate those with clinical finding, more specifically, to see whether is there any change in ejection fraction (EF) by developing new regional wall motion abnormality (RWMA) after hemodialysis session, and to correlate these changes with the symptoms and hemodynamic condition of the patients.

METHODS

This observational study was carried out on a total of 100 adult ambulant patients with ESRD on maintenance hemodialysis in the Department of Hemodialysis, BIRDEM General Hospital, Dhaka, Bangladesh. Their echocardiogram was done 30 min before and after the hemodialysis.

RESULTS

Among the 100 participants 39% were above 60 years and there was male predominance (male:female = 3:2). Mean ±SD serum creatinine level was 9.38 ±2.22 mg/dl and hemoglobin level was 9.0 ± 1.08 g/dl.

Figure 1: Associated risk factors

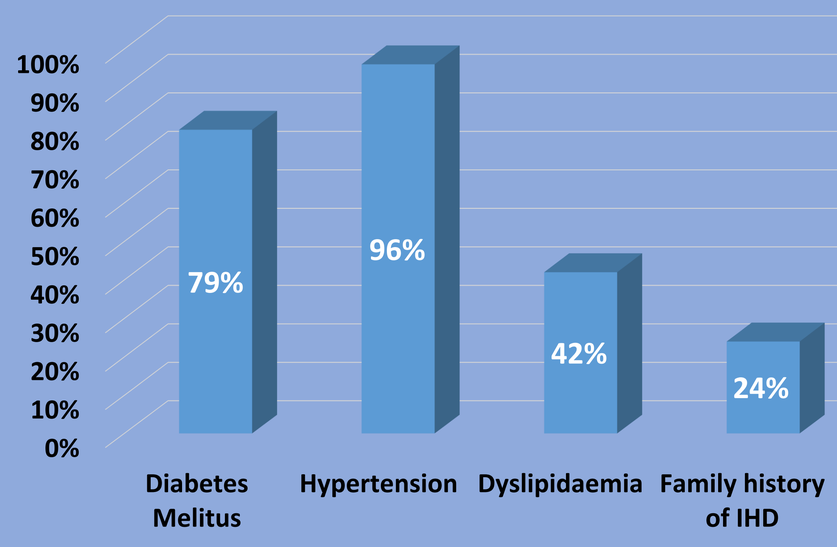
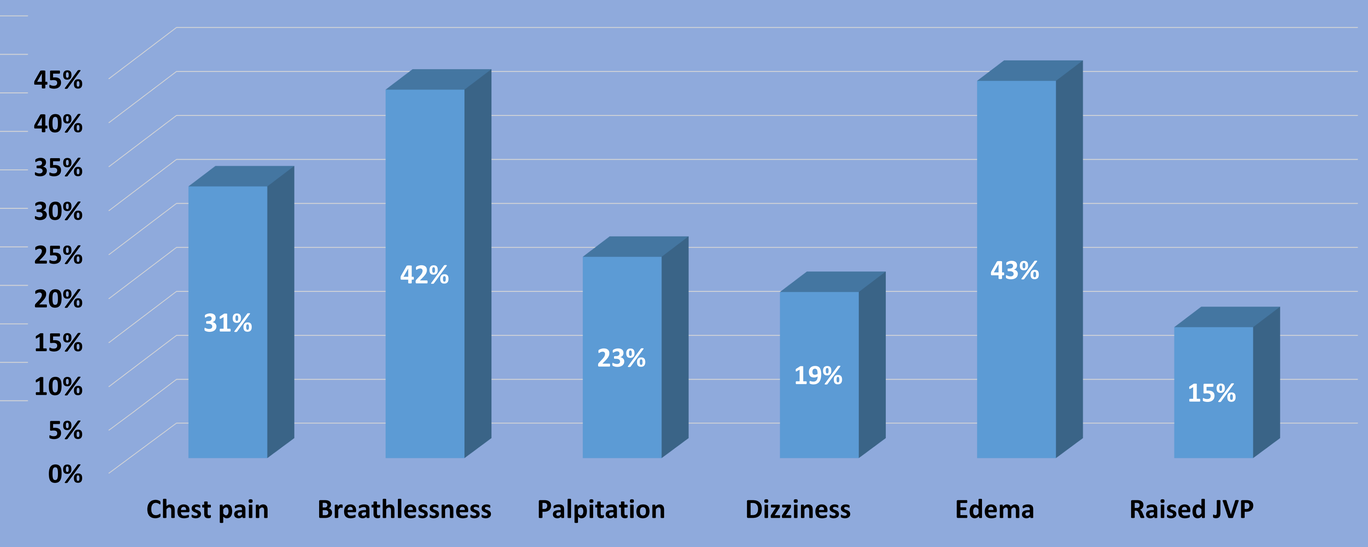


Figure 2: Associated symptoms and signs



After hemodialysis, left ventricular failure (LVF) occurred in 32% subjects. Hemodialysis induced regional left ventricular systolic dysfunction occurred in total 36 patients (36%) and total 14 (14%) patients developed LVF 30 minutes after dialysis. Patients with hemodialysis induced left ventricular systolic dysfunction were more in those who had worse predialysis EF. Blood pressure, heart rate, chest pain, palpitation, raised jugular venous pressure (JVP) and edema did not differ significantly before and after hemodialysis. Simple regression analysis revealed that the hemodialysis procedure significantly ($p < 0.05$) induced regional left ventricular systolic dysfunction.

Table I: Comparison of ejection fraction before and after haemodialysis

Ejection Fraction (%)	Before Haemodialysis	After Haemodialysis	p-value
≥ 55	62%	44%	0.011
40-54	34%	46%	0.084
30-39	4%	10%	0.097

CONCLUSIONS

Hemodialysis acutely induces regional wall motion abnormalities in a significant proportion of patients. It occurs within 30 min after hemodialysis session and is not related to changes in blood pressure, heart rate, JVP and edema.

KEYWORDS: Cardiovascular events, ESRD (end-stage renal disease), haemodialysis complications

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