Introduction

Acute hemodynamic changes are still the most frequent complications during hemodialysis (HD) treatment. This causes discomfort, reduces treatment efficacy, and thus increases long-term cardiovascular problems and consequently the morbidity of these patients. This also contributes to increased monitoring and workload of nurses and physicians, thereby increasing treatment costs ***(Barth et al., 2003).***

Maintaining optimal fluid status in patients with end-stage renal disease (ESRD) on regular hemodialysis (HD) is crucial to avoid circulatory complications ***(Hung et al., 2004).***

One of the common clinical manifestations of hemodynamic instability during hemodialysis is hypotension. The incidence of asymptomatic reduction in blood pressure during hemodialysis is in the range of 15-50%, which may contribute to increase in the morbidity among these patients ***(Orofino et al., 1990)***.

Hypotensive episodes have been explained by inadequate cardiac filling, induced in part by inadequate venous compliance ***(Kooman et al., 1992)***, temperature-induced decreases in total peripheral resistance (TPR) ***(van der Sande et al., 2001)***, decreased cardiac contractility and sympathetic inhibitory reflexes induced by cardiac underfilling ***(Converse et al., 1992)***.

Thus, the dialysis prescription should be individualized and designed to achieve optimal fluid status in the patients.

Pulsed wave Doppler echocardiography plays an important rule in the evaluation of the diastolic filling pattern of the left ventricle (LV).
There are different types of cardiac filling patterns that have been described in various diseases such as hypertension, which is associated with abnormal relaxation pattern (Type I), and dilated cardiomyopathy, which is associated with restrictive filling pattern (Type IV) ***(Gagliardi et al., 2004).***

Various parameters of Pulsed Doppler indices have been used to evaluate diastolic function in patients with ESRD (end-stage renal disease) including transmitral diastolic filling velocity which reflects filling dynamics of the left atrium (LA) and has been shown to be load dependent in subjects with various cardiac diseases. Measurement of dry weight is a common approach to design fluid management for patients with ESRD on regular hemodialysis ***(Khalfallaha et al., 2005).***

Quantitive measurements of preload reduction on the LV Doppler velocities in systole and diastole is not a common practice in these patients. Also, the relationship of these measurements to the changes of systolic blood pressure during hemodialysis has not been adequately investigated.