

P298

P298 -Characterisation of Haemodynamics in Haemodialysis Patients with Chronic Kidney Disease using the non-invasive Ultrasonic Cardiac Output Monitor (USCOM): a prospective serial measurement, observational study

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Introduction

Intra-dialytic hypotension is a common complication seen during in-centre haemodialysis(1). This is associated with the development of regional wall motion abnormalities and subsequent increased mortality(2). Fluid balance management during dialysis is thought to affect this but can be difficult to assess and monitor. Measurement of haemodynamic parameters can allow more accurate assessment, but often involve specialist skills such as echocardiography, or invasive monitoring, which may not be practical in a dialysis unit setting. The USCOM (Ultrasonic Cardiac Output Monitor) allows readings to be taken using continuous wave doppler ultrasound across the aortic valve, through placement of a probe at the suprasternal notch, which may allow it to be more user-friendly.

Aims and objectives

The aim of the study in patients with well established haemodialysis regimes was to investigate USCOM-determined changes in haemodynamic parameters during haemodialysis sessions.

Methods

Ethical approval was obtained to conduct a prospective observational study of serial measurements during sessions in a local haemodialysis unit. Each participant's USCOM measurements were taken prior to commencing a dialysis session, and then at intervals of 30 minutes for four hours. The final reading was taken after completing dialysis. Readings were taken from the supra-aortic position. Haemodynamic variables were calculated from these and non-invasive blood pressure readings using a standard blood pressure cuff.

Results

Thirty patients were recruited. Satisfactory USCOM readings were obtained from the aortic window in all cases. Mean stroke volume variation was significantly increased from baseline at 120 and 150 minutes after dialysis: 30% (95%CI 24 to 36) v 36% (CI 31 to 42) v 40% (CI 33 to48), p=0.04) respectively. Non-significant decreases in mean flow time corrected, mean cardiac inotropy, mean cardiac index and mean oxygen delivery were evident from time 90 to 210 minutes

Discussion

In a stable group of haemodialysis patients, the USCOM detected trends in haemodynamic parameters during dialysis. The most striking change was in mean stroke volume variation.