**Systemic haemodynamics in haemodialysis: intradialytic changes and prognostic significance.**

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**BACKGROUND**

Although haemodialysis (HD) leads to alterations of systemic haemodynamics that can be monitored using dilution methods, there is a lack of data on the diagnostic and prognostic significance of haemodynamic monitoring during routine HD.

**METHODS**

- Prospective, multi-center study;
- Study cohort: 215 stable hemodialysis patients.
- Cardiac index (CI), access flow (AF) & central blood volume index (CBVI) were measured during a single HD session with the HD03 Hemodialysis Monitor, (Transonic, Ithaca, NY, USA);
- Systemic CI (SCI) was defined as CI corrected for AF.
- Total end diastolic volume index (TEDVI) and the total ejection fraction (TEF) were calculated from the dilution curves for a subgroup of the patients (n = 82).
- Data were correlated with clinical parameters, cardiac biomarkers and bioimpedance measurements (body composition monitor; Fresenius Medical Care, Homburg, Germany)
- The mean follow-up time was 963 days (575–983 days).
- After a median follow-up of 2.6 years, 65 patients had died (30%), 8 (4%) received a kidney transplant and 7 (3%) moved away or terminated.

**RESULTS**

- At the beginning of HD, median CI, was 2.8 L/min/m2; CBVI was 15 mL/kg and AF was 980 mL/min.
- At the end of HD, CI significantly fell by -10%; CBVI fell by -9% and AF fell by -4%.
- Peripheral resistance (PR) increased slightly; blood pressure fell by -6/-3 mmHg to 128/63 mmHg.
- Independent predictors of CI were age and ultrafiltration rate;
- AF, overhydration and PR were protective of cardiac function;
- TEF was strongly associated with mortality, followed by TEDVI and SCI.

**CONCLUSIONS**

- Hemodialysis leads to a reduction of CI due to ultrafiltration;
- Hemodynamic monitoring identifies a significant number of hemodialysis patients with cardiac impairment that are at risk for increased mortality.
- The data underscore the prognostic relevance of cardiac function for the survival of HD patients.

**TAKE HOME**

This is a landmark study by Dr. Ferruh Artunc, Dr. Stephanie Haag and their group at Tübingen using the HD03-CO to show prognostic significance of cardiac parameters measured by the HD03 Hemodialysis Monitor in HD patients.

**REFERENCE**


https://www.ncbi.nlm.nih.gov/pubmed/?term=Systemic+haemodynamics+in+haemodialysis%3A+intradialytic+changes+and+prognostic+significance OPEN ACCESS (Transonic Reference # HD11498A)