

In-patient dialysis sessions are associated with higher ultrafiltration rates

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Introduction

High ultrafiltration rates and short dialysis treatment times are associated with morbidity and mortality in prevalent haemodialysis patients. The limited studies of the delivery of in-patient haemodialysis have, while demonstrating shortened inpatient treatment time, concentrated mainly on small molecule clearance. We set out to evaluate the delivery of haemodialysis to all in-patients with particular attention to the prescription of time and fluid removal.

Methods

In a single-centre large renal unit we prospectively collected haemodialysis data on all in-patients over a fourteen-day period. Ultrafiltration volumes are reported as percentage of target weight, for in-patients this was defined as the post-dialysis weight for each dialysis session. An unmatched cohort of stable dialysis patients was identified from our centre and dialysis data for a period of one year was used as a comparator.

Result

During the observational fortnight 69 patients (aged 42–88, mean 65 years, 55% male) undertook a total of 215 in-patient dialysis sessions. The median number of dialysis sessions was 2 sessions (range 1 to 10) sessions over the fortnight. In this cohort, 26 were incident to haemodialysis (<90 days since haemodialysis start), comprising 60 of the 215 dialysis sessions.

In-patient measurements were compared against 12 828 out-patient dialysis sessions in an unmatched cohort of 100 patients (aged 28–89, mean 65 years, 54% male).

The achieved volume of ultrafiltration was similar with in-patients, (2.7 ±1.5% of target weight [mean ±sd]), as compared to out-patients (2.8 ±1.3% of target weight, p=0.14). However, dialysis session time was significantly shorter with the in-patient group (3.0 ±0.8h) than in out-patients (4.0±0.5h, p<0.001). In keeping with this, ultrafiltration rates were higher but also more widely distributed with in-patients (8.4 ±4.4 ml/h/kg) as compared with out-patients (7.1 ±3.3 ml/h/kg, p<0.001)

Dialysis session time remained significantly shorter even when excluding incident haemodialysis in-patients (3.1 ±0.8h). Excessive ultrafiltration (ultrafiltration rate >13ml/h/kg) occurred more frequently with in-patient than out-patient sessions (16% vs 4%, p<0.001). Symptomatic hypotension was reported in 3% of in-patient sessions.

Discussion

In-patient dialysis, when compared with out-patient dialysis, is associated with shorter dialysis sessions and as a result, higher ultrafiltration rates despite similar target ultrafiltration volumes. It is unclear whether shorter dialysis treatment times relate to factors arising from the prescription, the logistics of in-patient

delivery or patient factors. Novel approaches to prescribing inpatient dialysis moving away from dry weight measurements may reduce extremes of ultrafiltration.