Blood gas measurements (N=362) in 53 chronic HD patients found a simple metabolic acidosis in only 22 patients (averaged values).\(^1\) Approximately one quarter of measurements in patients with serum \(\text{HCO}_3^-\) <20 mEq/L had a pH value >7.40 suggesting that adjusting dialysate \(\text{HCO}_3^-\) based on serum levels is problematic.

Serial cognitive function testing in 37 new HD patients evaluated before and after dialysis initiation found a significant decline in executive functions (but not global cognition or memory) after chronic dialysis was begun.\(^2\) Executive function refers to handling individual actions.\(^3\) Planning, trouble shooting, overcoming habitual responses and dealing with situations that are challenging or require a novel sequence of actions.

Mean levels of 107 uremic toxins fell by only 15% in patients receiving HD for an average of 14.6 h/wk over six treatments (N=30) compared with toxin levels in patients on standard thrice weekly HD (N=53; mean, 10.9 h/wk).\(^3\)

A 3 month randomized trial of N-acetylcysteine (2400 mg/d) in 47 HD patients with residual renal function found that GFR declined significantly (mean, 1 mL/min) in the control group and rose slightly in treated patients.\(^4\)

A prospective study of 154 hospitalized chronic dialysis patients (18 on PD) found a 38% readmission rate within 30 days: on adjusted analysis, readmitted patients were 2.3 fold more likely to have symptoms of depression and 2.6 fold more likely to have poor social support than patients not readmitted.\(^5\)

In a randomized, blinded, 2 month study in 57 hyperuricemia HD patients, febuxostat (40 mg thrice weekly) reduced serum uric acid (mean, 7.5 to 5.1 mg/dl) as well as modestly, but significantly reducing asymmetric dimethyl arginine (ADMA) and C-reactive protein.\(^6\)

A study of in vitro fibrin clot structure in 171 chronic HD patients found that those with a clot density greater than the mean value had a 3.2 fold higher adjusted cardiovascular mortality rate over the 3 year followup than patients with less dense clots.\(^7\) Fibrinogen from dialysis patients becomes glycosylated and guanidinylated, post translation changes that alter clot structure.

According to a study of 3276 HD patients, measuring PTH and calcium levels more frequently than usual in patients with out of range values improved achievement of treatment goals.\(^8\) More frequent measurement of phosphate levels was not helpful.

A prospective, cohort study of 365 HD patients using warfarin and 692 matched, control patients over a mean follow-up of 28 months found no association of warfarin use with either death or a composite event measure (including stroke) using a Cox hazards model analysis.\(^9\)

In a crossover study of 12 patients receiving hemodialysis and haemodiafiltration (with similar levels of cooling), intracardiac magnetic resonance imaging showed no difference in cardiac response to the procedures.\(^10\) All patients had at least some myocardial stunning which was proportional to ultrafiltration rate and BP. However stunning appeared early and did not appear to be attributable to any change in coronary artery flow.

An international (17 countries) study of outcomes in HD patients found that fluid overload (by bioimpedence) was associated with an increased 12 month mortality rate (HR 1.6) even with only modest (1.1-2.5 L) excess volume; volume depletion was also associated with higher mortality (HR 2.0).\(^11\) The combination of increased inflammation (C-reactive protein>6 mg/dL) and severe fluid overload (2.5-5.0 L) further increased mortality risk (HR 3.1 to 6.0).

A clinical risk score for 6 month mortality was developed in 2199 patients ≥65 years old who were starting chronic HD.\(^12\) The score ranged from 0 to 19 with seven inputs: age ≥80 years (2 points); estimated GFR (10-15 mL/min: 1 point; >15 mL/min: 3 points); congestive heart failure (2 points) hospitalization in prior 6 months (2 points); metastatic cancer (3 points); atrial fibrillation (2 points) and lymphoma (5 points). A score <5 predicted a mortality <25% while a score >12 projected a mortality >50%.

The effects of a home exercise program were assessed in 296 HD patients in a randomized trial; sessions involved walking at a progressively increasing pace for 10 minutes, three times weekly.\(^13\) After 6 months, the six minute walking test improved in the exercise group (mean, 328 to 367 m) but not in controls (321 to 324 m); the five times sit-to-stand test similarly improved (20.5 to 18.2 seconds vs 20.9 to 20.2 seconds).

A randomized, crossover study in 21 HD patients evaluated the effect on intradialytic hypotension (IDH) of cycling exercise during the first 60 minutes of HD versus pneumatic leg compression (first 60 minutes of HD) versus control.\(^14\) IDH was less frequent with the
compression protocol (24% of patients vs 43% and 38% for control and cycling, respectively). Compressions were thigh-high, sequential, circumferential and lasted for 11 seconds with a 60 second decompression period.

A survey among 196 US nephrologists regarding pregnancy outcomes in HD patients found that 78% resulted in a live birth with 44% complicated by preeclampsia. Unexpectedly, the survey found that women dialyzed for >20 h/wk were 2.2 fold more likely to suffer preeclampsia than those treated for <20 h/wk.

Compared to normal controls, nondiabetic dialysis patients (N=107, 90 on HD) had significantly lower fasting plasma glucose, lower insulin sensitivity and higher insulin secretion.

A randomized trial of three vs four CAPD exchanges in 139 patients with residual GFRs of ≥2 mL/min (mean of urea and creatinine clearances) found no differences in survival or residual renal function after 24 months but a slightly longer peritonitis free survival (P=0.05) in the three exchange group.

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