GLUCOSE TOLERANCE IN PATIENTS ON HAEMODIALYSIS, SEQUENTIAL ULTRAFILTRATION AND DIALYSIS AND HAEMOFILTRATION

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An abnormal glucose tolerance test has been previously described in uraemic patients. Haemodialysis improves glucose tolerance with a concomitant rise in insulin levels [1].

Intravenous Glucose Tolerance Test

0.5g glucose/kg body weight was administered intravenously pretreatment after an overnight fast in the following subjects:
1) Two undialysed uraemic patients, repeated after one week of haemodialysis.
2) Eleven patients on haemodialysis, repeated after four months of haemofiltration.
3) Five patients on haemodialysis, repeated after four months of sequential ultrafiltration and dialysis (UFD).
4) Five normal controls.

Haemodialysis and sequential ultrafiltration and dialysis were performed with the Travenol CF1500 dialyser. Haemofiltration was performed with the Amicon Diafilter 40. All treatments were done three times weekly and adjusted to maintain a pretreatment BUN of 90mg/dl.

The undialysed uraemic patients demonstrated abnormal glucose tolerance with insulin levels within the normal range. After dialysis was initiated, glucose tolerance improved, associated with a rise in insulin levels to above the normal level.

Haemofiltration resulted in a different response from haemodialysis to the glucose tolerance test: similar blood glucose levels were achieved in association with significantly lower insulin levels (Figure 1). Glucose tolerance and insulin levels were not different in the control haemodialysis period and after 4 months of maintenance UFD.

The lower insulin levels with unchanged glucose tolerance found in haemofiltration patients suggest that haemofiltration decreases peripheral resistance to insulin. Sequential ultrafiltration and dialysis resulted in no change in glucose tolerance or insulin response.
Figure 1. Results of pretreatment glucose tolerance test in 11 patients on control haemodialysis and after 4 months on haemofiltration. Mean values for blood glucose and plasma insulin are shown (* = p<.05 by paired t test, haemodialysis compared with haemofiltration)

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References