**When Kidneys Fail, Can Glycation Prevail? – Evaluating HbA1c, Fructosamine, and Glycated Albumin in haemodialysis**

**Aims:**
To evaluate the utility of glycated albumin (GA) as a marker of glycaemic control in patients with type 2 diabetes mellitus (T2DM) undergoing haemodialysis (HD), in comparison to established markers HbA1c and fructosamine.

**Methods:**
Data were collected for 30 patients with T2DM receiving HD at a tertiary level hospital in Australia during December 2024. Variables included age, cause of end-stage kidney disease (ESKD), erythropoietin (EPO) use, duration on HD, diabetes treatment, and glycaemic control before and during HD. Biochemical markers—HbA1c, fructosamine, glycated albumin (measured using the Lucica GA-L assay), creatinine, albumin, total protein, and haemoglobin—were recorded. Data analysis was performed using linear regression.

**Results:**
The cohort (18 males, 12 females) had a mean age of 65.8 years (range 42–92) and a mean HD duration of 4.5 years. Diabetic nephropathy was the most common cause of ESKD (n=24). Diabetes management varied: 2 patients were diet-controlled, 19 on insulin, and 9 on oral agents. Anaemia (Hb <120 g/L) was present in 15 patients, and 24 were on EPO therapy.

Mean glycaemic marker levels were: fructosamine 400.9 ± 87.2 µmol/L (ref interval 200-290), GA 528 ± 286.4 mmol/mol (ref interval 164-292), and HbA1c 7.6% ± 1.5%. Patients with historic HbA1c >8% had greater variability over time (P < 0.01). HbA1c showed a non-significant trend with haemoglobin (r = 0.39, P = 0.07), but was not strongly affected by EPO as was demonstrated in other studies (1,2). Fructosamine was influenced by total protein (r = 0.43, P < 0.05), whereas GA was not (r = 0.11). Variability in GA and fructosamine increased in patients with discrepancies between total protein and albumin (r = 0.42, P < 0.05).

**Conclusion:**
Glycated albumin appears to be a more reliable indicator of glycaemic control in the HD population, with less susceptibility to confounding from anaemia and protein level fluctuations compared to HbA1c and fructosamine.

**References:**

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