

CHRONIC KIDNEY DISEASE. LAB METHODS, GFR MEASUREMENT, URINE PROTEOMICS

SP228 CONCORDANCE BETWEEN IOTHALAMATE AND IOHEXOL PLASMA CLEARANCES

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Introduction and Aims: Iohexol clearance is regarded as an accurate reference method for measuring glomerular filtration rate (GFR), and may represent a valid alternative to the gold standard, i.e. urinary clearance of inulin. Because urinary clearance of inulin is cumbersome and expensive, iohexol clearance in Europe and iothalamate clearance in USA became popular. Still, head-to-head comparisons of these two methods are lacking.

Methods: We concomitantly measured GFR by plasma clearance of both iohexol and iothalamate in 101 consecutive patients. Five mL of iohexol (OmnipaqueTM240; iohexol, 240 mg/mL, GE Healthcare BVBA, Belgium) and 5 mL of iothalamate (ConrayTM 30; iothalamate meglumine, 141 mg/mL, Covidien, Germany) were simultaneously injected and flushed with 10 ml saline. Blood samples were obtained using contralateral arm at 120, 180, 240, and 300 min post injection. Blood samples were centrifuged for 10 min at 1500 rpm within 2 hours of collection, and stored at -80 °C. Iohexol was measured by high performance liquid chromatography (HPLC). Iothalamate was measured by LC-tandem mass spectrometry (LC-MS/MS). GFR was calculated upon Brochner-Mortensen.

Results: Mean GFR measured by iohexol and iothalamate clearances were 77±25 and 80±29 mL/min/1.73 m², respectively. The equation for Passing-Bablok regression line (with 95% confidence intervals) was $y(\text{iohexol})=0.88x(\text{iothalamate})+7(0.82 \text{ to } 0.94; 3 \text{ to } 11)$. The concordance coefficient of correlation gives a ρ value of 0.93 and C_b of 0.99. Relative bias between iohexol and iothalamate reached $-2\pm 13\%$. Accuracy within 30% and 15% (i.e. the percentage of iohexol GFR within 30% or 15% of iothalamate GFR) was 98% and 80%, respectively.

Conclusions: Our results show that concordance between iohexol and iothalamate plasma clearances is acceptable for both clinical and research applications. Virtually all measures show a difference lower than 30%. Moreover, the difference is below 15% in 80% of cases, which is realistic given the intra-individual 10% physiological variation of GFR.