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FREE WATER CLEARANCE VALUE OBTAINED WITHOUT MEASURING URINE UREA IN THE FUNCTIONAL EVALUATION OF THE THICK ASCENDING LOOP OF HENLE

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To the Editor:

The evaluation of the thick ascending loop of Henle gains importance in the diagnosis of entities which affect its functioning, as is the case of the Bartter's syndrome. Since such tubular segment generates free water clearance (CH₂O), its evaluation will be carried out using the hyposaline infusion test, which documents the patient's CH₂O in situation of maximum dilution. In this study, finding a reduced CH₂O is interpreted as a reduced function of the thick ascending loop of Henle ¹.

For calculating CH₂O, urine and plasma osmolarities are used. In absence of high serum urea, hyperglycemia, proteinuria, and glucosuria, calculated osmolarity does not differ from the measured one. The formulas for plasma and urine osmolality are the following ones ².

- Plasma osmolality (PO) = (natremia (mmol/l) x 2) + glycemia (mg/dl)/18 + uremia (mg/dl)/6
- Urinary osmolality (UO) = (natruria (mmol/l) + potasiuria (mg/dl)) x2 + urinary urea (mg/dl)/6

Once the plasma and urinary osmolality data has been gathered the CLH₂O can be obtained applying the following formulas:

- V% = Creatininemia (mg/dl) / Creatininuria (mg/dl) x 100
- CLH₂O = UO / PO x V %

Since we usually observed very low urine urea values during hyposaline infusion test in patients without diabetes mellitus nor nephropathy, we decided to compare in 20 non diabetic

nor nephropathy volunteers, their CH₂O values obtained during this test using urine urea in the formula (classic method) as well as excluding it (simplified method). Thus, CH₂O was calculated in each volunteer using the conventional formula (including urea) and excluding it (new formula proposed), and then both values were compared by applying Wilcoxon test. No statistically significant difference was found between CH₂O values, either obtained by the classical formula (with urinary urea) or by the simplified one (without urinary urea) (Table 1).

Table 1: Free water clearance (CH₂O) value obtained by measuring urine urea (classical formula) and not doing it (simplified)

	CH ₂ O ml-min-1.73 m ²	range ml-min-1.73 m ²	p
With urea	6.9	3.9 – 10.5	NS
Without urea	7.1	3.3 – 11.7	

We conclude that in patients without diabetes mellitus and nephropathy, the calculation of free water clearance is not significantly altered in the absence of measuring urinary urea.

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