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Change in Arginine Vasopressin Concentrations with Age

To the Editor:

There have been conflicting reports on changes in the concentrations of plasma arginine vasopressin (AVP) with age (1, 2). Difficulties become apparent when interpreting results in older subjects, who are rarely used to determine the reference range because of their medical complications and unavailability to the laboratory.

Plasma AVP was measured for 2 years in 68 healthy volunteers (ages 53–87 years) and compared with our reference range for 45 subjects (ages 21–51 years), which had been established 2 years previously as part of the weekly diagnostic service. To ensure continuity of the reference range, we routinely included in each assay three plasma quality-control samples. The study was approved by the hospital ethical committee. The elderly subjects (older than 75 years) were classified as healthy on the basis of the absence of significant abnormalities as shown by clinical assessment, a full blood count, serum electrolytes, renal and liver function tests, a chest x-ray, an electrocardiograph, and two-dimensional transthoracic echocardiography. No subject was prescribed medication known to influence the concentration of plasma AVP.

Plasma was applied to Sep-Pak C18 columns (Millipore Waters, Milford, MA), and eluted AVP was measured by radioimmunomassay as described previously (3). The sensitivity (detection limit) of the method, measured as the minimum amount of AVP that could be statistically distinguished from zero at 95% confidence limits, was 0.1 pg/tube (0.45 ng/L, or 0.42 pmol/L). The mean within-run CV was 11.1% for three plasmas with AVP at 3, 5, and 10 ng/L examined 10 times in one day; the mean between-run CV was 11.7% for three plasmas with AVP at 3, 4, and 6 ng/L assayed over 12 days.

By unpaired t-test, the mean (±SE) AVP concentration in the plasma of the 68 older subjects was significantly higher (4.7 ± 0.6 ng/L) than that found in the younger group (2.1 ± 0.2 ng/L, n = 46; t = -3.54, P < 0.001). In all subjects studied, we observed a significant correlation between plasma AVP concentration and age (r = 0.29, P = 0.002) (Figure 1) and between the plasma AVP to osmolality ratio and age (r = 0.29, P = 0.002). However, because serum osmolality did not change significantly with age, this means that, in healthy subjects, aging is accompanied by an increase in AVP synthesis (or secretion) or decreased elimination, independent of variation in its major physiological determinant.

References


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Utility of Unconjugated Estriol in Screening for Down Syndrome is Not Proven

To the Editor:

In an editorial (1) to our paper on unconjugated estriol (UE3) assays in Down syndrome screening (2), Cuckle asserts that UE3 should continue to be used in Down syndrome screening because UE3 is important because α-fetoprotein (AFP) may be increased in cases of trisomy 18 with neural tube defects (NTD) or ventral wall defects, and that "modified parameters" have been reported that significantly improve detection when UE3 is used (3).

Fig. 1. Correlation between plasma AVP concentrations and age in 113 healthy adults