Immunoreactive Sm-C/IGF-I in Urine From Normal Subjects, Pituitary Dwarfs, and Acromegalics

The authors report the development of a somatomedin-C (Sm-C) radioimmunoassay that permits measurement of miniscule quantities of Sm-C found in urine (1/1000 the quantity/mL in serum). The assay was used to measure Sm-C in the early morning urines of three acromegalics, 15 growth hormone (GH)-deficient children, and 25 normal adults, and in the urines of 230 normal infants, children, and adolescents. The total excretion was referred to the creatinine excretion (Cr) to gain more consistency than was otherwise possible.

The mean GH:Cr values for ten different age groups were:

Newborn	1-23 mo	2-3 yr	4-5 yr	6-7 yr	8-9 yr	10-11 yr
1.07	0.34	0.38	0.36	0.23	0.23	0.28
12-13 yr	14-16 yr	25-45 yr				
0.23	0.19	0.19				

Mean values of GH:Cr were high in the newborn (1.07) but much lower (0.34) in children 1 month of age or older. The values for the three acromegalics were 17.3, 1.52, and approximately 1.10. The values for the 15 children with GH deficiency (GHD) were all less than the mean for age, but only five were below -2 standard deviations for age. The test probably cannot be used for the diagnosis of GHD at this time.

The authors emphasize that no correlations have been made with serum GH concentrations or serum Sm-C determinations. The urinary concentrations of Sm-C are in most cases only 0.1-1 ng/mL, much lower than one might have expected from plasma concentrations. The presence of binding proteins for Sm-C in plasma may contribute to the discrepancies observed between plasma concentrations and urinary excretion. It is possible that the Sm-C found in urine is secreted by the renal tubules. Further studies are needed to clarify the physiology involved.

Yokoya S, Suwa S, Maesaka H, et al. *Ped Res* 1988;23:151.

Editor's comment—*Both Sm-C and GH are now measurable in very miniscule quantities in urine. The amounts of each are so small that it is difficult to believe that these assays will be pertinent to routine clinical studies. However, they may have applications in research. The reader is encouraged to read the abstract on page 15 on quantitation of urinary GH in children with normal and abnormal growth.*

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