Effective thyroxine ratio in infants, children, and adolescents

Sir,

The findings of Brien, Fay, and Griffin (1974) were of interest to us since we had recently completed our own evaluation of the normal range for this test in infants, children, and adolescents, derived from subjects who were euthyroid patients in this hospital.

Our results (see Table) show that the peak of the increased levels found by Brien *et al.* occurs during the first week of life, and that values markedly higher than adult levels also occur in the second week and in cord blood. After 2 weeks there are slight rises which decline gradually throughout childhood until the adult normal range is reached at about 15 years.

These findings for the first 2 weeks of life, and for cord blood, are consistent with the reported results of other tests which measure free thyroxine either directly (Marks, Hamlin, and Zack, 1966) or, as with the effective thyroxine ratio, indirectly (O'Halloran and Webster, 1972; Chan *et al.*, 1973; Eastman *et al.*, 1973). They may be attributed to the increased thyrotropin levels found at these times (Fisher and Odell, 1969; Eastman *et al.*, 1973).

Our own experience of this test for over 2 years has confirmed the expectation that the effective thyroxine ratio would be of particular value in the assessment of

thyroid status in circumstances where, as in infancy, other tests may be ambiguous because of variations in thyroxine-binding proteins.

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TABLE

Values of effective thyroxine ratio found in euthyroid infants, children, and adolescents

Age	Number of subjects	Mean (SD)	Normal range (Mean $\pm$ 2 SD)
Cord blood	30	1.05 (0.048)	0.95-1.15
0-7 dy	50	1.13 (0.093)	0.94-1.32
8-14 dy	31	1.06 (0.059)	0.94-1.18
2-6 wk	26	1.02 (0.049)	0.92-1.12
7 wk-1 yr	35	1.01 (0.042)	0.93-1.10
1-5 yr	59	1.00 (0.052)	0.90-1.10
6-10 yr	43	1.00 (0.039)	0.92-1.08
11-15 yr	24	0.99 (0.038)	0.92-1.07
16-20 yr	20	0.98 (0.057)	0.87-1.10
Adult (Wells, Wikramanayake, and Woollen, 1972)	1000	0.99 (0.053)	0.88-1.09