

75 STATUS OF HYPOTHYROID PATIENTS AT 6 YEARS N.E.Cong.
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Fifty-six hypothyroid children diagnosed on neonatal screening were examined at 6 years with appropriate school achievement tests, tests of neuropsychologic functions, and the WISC-R. Controls were 31 sibs of hypothyroid patients and 29 euthyroid children with deficient T₄ binding. The 56 patients, as well as other younger patients, had been examined at ages 3-5 for gross neurologic abnormalities including ataxia, nystagmus, and strabismus, and tested with the Stanford-Binet Intelligence Test, the Vineland Social Maturity Scales, and the Beery-Buktenica Test of Visual-motor Integration. They did not differ in any of these examinations from suitable controls. At 6 years, the patients and controls did not differ in overall WISC scores nor in any of the WISC subtests. More importantly, they did not differ in results of tests of school achievement, of varying modalities of sensory perception, of spatial orientation, of concept formation or of accuracy of fine movements. The patients did not suffer from short attention span or hyperactivity. They did, however, lag behind the controls in developing speed of motor performance. The speed of motor performance in the patients did not correlate with their IQ. This was the only failure of correlation between any neuropsychologic test and IQ in either patients or controls. Determination of the practical significance of delayed development of motor speed as well as final evaluation of the patients' intellectual development awaits results of school achievement tests after completion of the second or third grades, but none of the studies to date suggests potential school problems.

76 PRIMARY NEONATAL THYROID SCREENING BY BOTH TSH AND T₄: RESULTS OF SCREENING 720,000 INFANTS IN JAPAN.
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Among 723,797 infants screened by both TSH and T₄ in Kanagawa prefecture, Chiba prefecture and Sapporo city (for 4, 6 and 5 yr. respectively), 106 infants with hypothyroidism have been detected (1/6,828). Of 106 cases, 16 were transient hypothyroidism (1/45,237), 89 were primary hypothyroidism (1/8,133), and only one was congenital selective pituitary TSH deficiency. Filter-paper spot TSH and T₄ was measured by RIA. Cut off point of T₄ level was mean-2SD in one assay system (usually between 3.5 and 4.5 mcg/dl, equivalent to serum) and TSH level was the highest 3% of one assay system (usually about 12 - 15mIU/ml, equivalent to whole blood). Only 5 of 106 cases (4.7%) were detected by low T₄ value with normal TSH. One of them was selective TSH deficiency and the other 4 were transient hypothyroidism. The other 101 cases (95.3% of 106 cases) were detected by high TSH with low T₄ (58 cases, 54.7% of 106 cases) or without low T₄ (43 cases, 40.6%). The case with selective TSH deficiency, which showed hypothyroid symptoms on age 22 days, and reserved normal pituitary functions except TSH secretion and responsive thyroid gland to external TSH, will be presented. From these our study of ideal screening program, it is concluded that secondary or tertiary hypothyroidism is very rare in Japan, and primary TSH screening is superior to T₄ screening program.

77 RELATIONSHIP BETWEEN PREGNANTS AND THEIR OFFSPRINGS IN A SCREENING PROJECT FOR THYROID DYSFUNCTION AND ANTITHYROID ANTIBODIES.

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A screening project for thyroid disorders of pregnant (in the first trimester) in Tokyo area has been performed since November 1980. By the end of August 1984, 32,834 pregnant were screened. Among them 102 pregnant had thyroid disorders (hyperthyroidism 23 cases, hypothyroidism 13 cases, Hashimoto's disease 25 cases, simple goiter 31 cases). The relationship of thyroid function including antithyroid antibodies (Microsome Test and Thyroid Test, Fuji Rebio, Inc., Japan) between 9,733 pregnant and their offsprings was examined. The incidence of thyroid dysfunction in the offsprings (neonatal period) of the pregnant with thyroid disorders is 250 times as many as that in the offsprings of the pregnant without thyroid disorders. The frequency of thyroid disorders in the pregnant in whose offsprings the antibodies were positive, was 16 times as many as that in the pregnant in whose offsprings the antibodies were negative. The incidence of thyroid dysfunction in the offsprings in whose mothers the antibodies were positive, was 10 times as many as that in the offsprings in whose mothers the antibodies were negative.

78 BRAIN STEM AUDITORY EVOKED POTENTIALS (BAEP) IN CONGENITALLY HYPOTHYROID CHILDREN UNDER EARLY REPLACEMENT THERAPY. J.H. Dussault, R. Hébert, J.-E.

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Congenital hypothyroidism, even when detected and treated early, still leads often to hearing and speech problems. We have evaluated the lower auditory pathway status of a significant group of these children under thyroid hormone therapy with the brain stem auditory evoked potentials (BAEP) technique. Thirty-four (34) hypothyroid and 24 age-sex matched euthyroid children aged between 5 and 12 years old have been evaluated. BAEP abnormalities were found in 21 hypothyroid children (62%): first, prolonged peak latencies were observed in 9 children with 2 of them also showing prolonged I-V interpeak latency (IPL) and, secondly, shortened wave I latencies and shortened I-III, III-V, I-V IPLs were observed in 15 children, 3 of them also displaying prolonged wave I or III latencies and therefore also being included in the first group. The children with prolonged latencies were referred for other audiometric evaluations. On the other hand, we would be inclined to speculate on a relationship between the abnormally short BAEP latencies and the elevated levels of thyroxine determined in the treated hypothyroid children. However, more data are needed to go further in the interpretation. These preliminary results indicate a high incidence of BAEP abnormalities in a significant number of hypothyroid children under early replacement therapy.

79 FREE THYROXINE (FT₄) AND FREE TRIIODOTHYRONINE (FT₃) IN CHILDREN: COMPARISON OF FOUR DIFFERENT METHODS

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FT₄-measurement as a routine method is established in newborns recalled for a 2nd blood sample by thyroid screening. Since the kinetic FT₄-assay (A) has been widely discussed for its potentially misleading results in adults the results of A are compared with 3 analogue methods (B, C, D). In addition TT₄, TT₃ and FT₃ values are compared in 149 children of different age: group I: first 2 months; group II: 3rd to 24th month; group III: 3rd to 8th year of life. RESULTS: FT₄, TT₄, FT₃ and TT₃ values of method A were significantly higher (p 0.001) than of the methods B, C, D in all 3 groups. Mean FT₄ and FT₃ values of all 4 methods showed less variations than TT₄ and TT₃ values. There was a 20-30% decline in FT₄ between I and III in A, B and D but not in C. Where-as FT₄ values of all methods correspond by means of a decline with increasing age, FT₃ values were not corresponding with each other neither referring to method nor to age group. CONCLUSIONS: All 4 methods performed well and were statistically identical with respect to their diagnosis in children up to 8 years. The differences between the methods may play a more important role in severely sick children or in adolescents.

80 NEUROPSYCHOLOGICAL ABNORMALITIES IN CHILDREN TREATED FOR HYPOTHYROIDISM FROM EARLY LIFE

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The outcome of 45 children treated for hypothyroidism from early life was documented by means of a retrospective study. RESULTS: 1. Physical and mental development depend from time of diagnosis. If treatment starts within the first three months of life the outcome improves significantly. Late treatment results in a delayed dentition, psychomotor and mental development; speech development and EQ were subnormal in most of these patients. The final status in children treated before (after) 3 months was IQ 35-84 in 40% (55%) and IQ 85-114 in 60% (45%). 2. In 89% of the patients at least one or several symptoms of psychological and/or neurological dysfunction could be evaluated. 3. The developmental deficits at least partially may be due to a poor compliance of thyroid hormone treatment. More than 24% of the patients were treated irregularly. CONCLUSION: To improve the results of early thyroid hormone replacement therapy newborn thyroid screening programs should be necessarily accompanied by an efficient follow-up program in order to ensure optimal treatment of patients with congenital hypothyroidism.