HYPOTHYROIDISM IN CHILDHOOD

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The thyroid gland produces a secretion containing large amount of iodine. Its active principle is called thyroxin (Kendall). Besides these there are other iodine containing substances, which have either similar or antagonistic action to thyroxin. Iodine is present both in organic and inorganic combination. The action of the whole thyroid substance is not identical with that of thyroxin alone. Thyroid activity is dependent on the nervous system and other inner secretory organs, specially hypophysis. Thyroid is known to stimulate metabolism, specially anabolic processes in all cells of the body.

Although thyroid gland is not an essential organ, it has marked influence on the physical and mental development of children. A lasting disturbance of its functions leads to grave consequences.

The stimulation of thyroid functions manifests itself in higher metabolic rate, emaciation, and increased output of water-metabolism. Pulse and respiration rate and peristalsis is increased; temperature is also raised. In blood, protein concentration and the viscosity is lowered, coagulation is delayed, cholesterin content is lowered but the iodine content is increased.

SYMPTOMS OF SUB-THYROIDISM

Sub-thyroidism leads to the following symptoms:—The metabolic rate is low, fat deposit and weight is increased. Water is retained in the tissues, peripheral circulation is disturbed. In blood protein concentration and viscosity is raised. Coagulation is accelerated, cholesterin content is raised, and iodine content is lowered. The physical and mental development as a whole is retarded.

The classification of thyroid diseases purely on ætiological or anatomic-pathological principles is not possible. Symptom-

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atic classification consists of three main groups: first, those without marked disturbances of specific endocrine functions, secondly, those with diminished endocrine activity and thirdly, those with increased activity.

In this paper only those conditions with diminished endocrine activity have been considered. From aetiological standpoint malformations of the thyroid gland, infectious-toxic and inflammatory disturbances are to be considered. The onset of the disturbances generally starts in foetal life but there are some post-natal causes, and post-operative injuries, which may lead to the disturbances of thyroid functions. The complete cessation of thyroid activity is called athyroidism and partial cessation hypothyroidism.

The congenital athyroidism is difficult to diagnose in the new-born or small infants. One of the striking conditions is complete idiocy. Children do not even desire to have food. There is marked constipation. The appearance is characteristic: open mouth, protruding tongue, striking fullness of the subcutaneous tissues, dry and raw skin. The skin is loose, and can be picked up in folds. Hairs on the scalp are at the beginning thick, later they become dry and thin. Often there is umbilical hernia.

The following case will illustrate the condition:

Case 1: W. M., a girl aged 13 months, at this age she had no teeth, could sit only with support, cannot stand, walk or speak. At birth the body was plump, mouth wide open, tongue big. The baby was always very quiet, and took no interest in surroundings. Appetite was good. There was chronic constipation.

Physical examination: Physically and mentally retarded child with idiotic expression but in good nutrition condition. The face flat, forehead depressed, marked delineation of the hair-margin, saddle nose, wide open mouth, very protruding tongue, no teeth, neck short and plump, thyroid not visible, nor palpable, skin dry, hairs scanty and dry, retarded development of skeletal bones, open fontanelle 4 cm., anterior and posterior sutures open and prominent. Abdomen big and protuberant, diastasis recti. No ossification centres in the wrist. During a year’s treatment the child grew 15.5 cm. taller, also cut 16 teeth, could walk and was very lively. The eruption of the teeth began a month after the treatment was started and after six months of treatment ossification centres appeared at the wrist. Hairs, which were previously dry, fell, new hairs of normal texture grew. After 8 years of treatment, (that is, when the child was 9 years old) ossification and the height not only corresponded to the age but above the average. The mental development corresponded to that of a 7 years old child. At the tenth