It has been reported that with increasing intensity of the thermal stress the concentration of sodium increases, and that of potassium decreases, so that under conditions of very profuse sweating the concentrations will approach those found in an ultrafiltrate of the plasma.

Accordingly the Na/K ratio is believed to give more accurate information on the salt regulating activity of the adrenal cortex than for instance determination of sodium (or chloride) alone. The Na/K ratio will be independent of any uncontrolled evaporation.

PREMATURE PUBARCHE. A HYPOTHALAMIC DISORDER? REPORT OF 17 CASES

By

E. Thamdrup

The term premature pubarche is given to conditions in which there is precocious growth of sexual hair (pubes and axillary hair) without any other symptoms of precocious puberty, i.e. without development of the genitals and, in girls, without growth of the breasts. Girls do not become virilized as in the case of the adrenogenital syndrome.

The series of cases comprises 17 patients, 12 girls and 5 boys. The symptoms in the former were observed before the age of 8, and in the latter before the age of 9 years. The patients were from the Dronning Louises Børnehospital (children’s hospital, Copenhagen), the Paediatric Department of the University Hospital, Copenhagen, and 5 homes for the mentally defective: Andersvænge, Brejning, Ebberødgård, Ribe and Rodbygård.

Twelve of the patients had severe cerebral disorder, they were all mentally retarded, seven had epilepsy and seven spastic parceses. Four were blind, two had a coloboma of the uvea. Four had repeated periods of unaccountable rise in temperature (»cerebral fever«?). In eight patients air-encephalography revealed a considerable cerebral atrophy, also involving the hypothalamic region. One of these patients, a girl died at the age of 4½ years. Post mortem examination of the brain confirmed the encephalographic finding. Microscopical examination of the hypothalamic region showed atrophic ganglion cells and status marmoratus with proliferation of the glial cells. The endocrine organs were normal macro- and microscopically. Two boys were obese.

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Hormone analyses of 24-hour urine showed a slightly increased excretion of 17-ketosteroids and reducing corticoids in most cases (Figs. 1 and 2). Oestrogens could not be demonstrated. In two patients one analysis showed an excretion of gonadotrophin > 50 M. U., in the other cases this was < 50 M. U. Examination of the vaginal epithelium stained according to Schorr's method showed infantile cells with no oestrogenic effect. The genitals, height and bone age of the patients corresponded to their chronological ages. Roentgenological examination of the sella turcica and of the urinary tract with regard to the adrenal regions showed normal conditions. Figs. 3 and 4 show the genital region in two of our patients.

In 1952 Silverman et al. published a series comprising 29 patients (28 girls and 1 boy). The author observed a number of the patients until the normal age of puberty. Development of the breasts and menarche occurred at the normal time, and none of the girls were virilized.

According to Silverman et al., the cause of the precocious growth of sexual hair may be (1) increased susceptibility of the hair follicles to androgenis hormone, and (2) increased secretion of adrenal androgens. The first explanation is purely theoretical, while both the findings of Silverman et al. and the present

![Graph](image_url)

**Fig. 1.**

The excretion of 17-KS in relation to age in 14 patients with premature pubarche (27 analyses). The median curve indicates the average excretion in normal children, the lower and upper curves the extreme normal variations (after Chr. Hamburger).

There is a tendency to excretions above the average.
The corticoid-excretion in relation to age in 12 patients with premature pubarche (17 analyses). The median curve indicates the averages excretion in normal children, the lower and upper curves the extreme normal variations (after M. Sprechler). There is a tendency to excretions above the average.

Seven out of 29 patients reported by Silverman et al. were mentally retarded.
The authors consider this to be a coincidence. In the present series of cases, 12 out of 17 children were markedly oligophrenic. In examinations of 393 children from 6 homes for the mentally defective (271 boys < 9 years and 122 girls < 8 years of age) the authors found 8 patients (7 girls and 1 boy) with premature pubarche. This incidence is not found in a similar number of normal children. Air-encephalography in 8 children with premature pubarche showed diffuse cerebral atrophy which also involved the hypothalamic region. This was confirmed at post mortem examination in one case. The precocious growth of sexual hair may possibly be explained as being caused by a disturbance in the cerebral regulation of the hormone production of the adrenal cortex, perhaps via the hypophysis.

REFERENCE


TESTICULAR BIOPSIES IN CRYPTORCHIDISM

By

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The purpose of this investigation was to determine whether it is justifiable to postpone operation for cryptorchidism until the beginning of puberty (Andersen et al., 1954).

Biopsy was performed of 30 testes from boys at ages from 6 to 14 years (Group 1) (As to the technique, see Fig. 1) and the genital development and secondary sex characters of the patients classified as (1) early puberty, (2) pre-puberty, and (3) not having reached puberty.

The biopsy specimens were fixed in Bouin's solution and stained with hematoxylin-eosin. The histological picture was evaluated on the basis of biopsies from normal testes and classified according to Talbot (1952) and Albert et al. (1953) as infantile, prepuberal, and puberal.

None of the testes examined, either retained or inverted (ectopic) were found to be degenerated.

Some of the patients had been treated with chorionic gonadotrophin (Physex) from 7 to 14 months prior to operation. The testes from these patients did not differ from those of the other boys.