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L-cystathionine and taurine in human brain during early foetal development.

The developmental changes in the concentration of L-cystathionine and taurine in human foetal brain tissue were examined during the first and second trimester, which is the period of intensive neuronal growth and multiplication. Brain tissue samples were obtained from 14 foetuses (crown-rump length 2.5-21 cm) at legal therapeutic abortions. Tissue specimens were immediately prepared for amino acid analyses which were performed by automatic column chromatography. There was virtually no L-cystathionine in whole-brain tissue from the smallest foetus (crown-rump length 2.5 cm). Throughout the first and second trimester a steady increase in the concentration of L-cystathionine occurred in foetal brains. The amount of taurine was high in brain tissue from the smallest first-trimester foetus: some increase occurred during first and second trimester. During early foetal development the concentration of taurine in human brain was higher than previously reported amounts during perinatal period and adult life. The distribution of L-cystathionine and taurine in brain tissue during late mid-trimester differed from that observed in adult humans.

**90** C.A. CANOSA\*, V. PEREZ CANDELA\*, F. FOLCH\*, L. SAN ROMAN\* and J. MARTINS FILHO (Intr. by H.K.A. Visser). "La Fe" Children's Hospital Valencia, Spain. Intrauterine bone growth.

At birth, growth and maturation of the newborn are usually assessed by clinical, anthropometric and neurological examinations. A new quantitative and objective method is presented: the length of cubitus and radius. A total of 156 newborns, 75 males and 81 females appropriate for gestational age (AGE), from the 24th through the 40th week of gestation were studied. Three independent investigators participated in the collection of the data, only one of them, by necessity, knew the date of the last menstrual period. Bone length was measured by a "DIAL CALIPER HELIOS" with a sensitivity of  $10^{-5}$  meters. Bone growth in length from the 24th through the 40th week is a linear function with apparently two different slopes, one between 24 and 30 weeks, the other from 31 through 40 weeks. Weekly growth was 1.0 mm for the cubitus and 0.9 mm for the radius. No significant statistical differences in bone growth were observed between males and females. The standard error of the method was  $\pm 2$  weeks. Since by design, cases of intrauterine malnutrition (IM) were not included in the study, its impact on bone length growth could not be assessed. The hypothesis that IM affects bone length growth is now under study.

**91** A.S. ARONSON\*, L.I. HANSSON\* and G. SELVIK\* (Intr. by B. Lindquist). Departments of Paediatrics, Orthopaedic Surgery and Anatomy, University of Lund, Sweden.

An X-ray stereophotogrammetric method for short time bone growth studies. Application in growth hormone deficiency.

A new high-accuracy technique for bone growth analysis is introduced. The increasing distance between tantalum bone markers of 0.5 mm on each side of the distal fibular growth zone is measured. In the rabbit the methodological error is about 30  $\mu$ m and in man about 10  $\mu$ m. In addition there is a variation due to marker instability which is slightly higher than the methodological error.

The normal growth rate of a child's distal fibula is about 10-20  $\mu$ m/day. About monthly analyses showed growth rate to increase about threefold when HGH therapy was started in eight growth hormone deficient children and to decrease about tenfold in two other children upon temporary cessation of therapy. Upon reinstatement of treatment about half of the precessation rate only was obtained in one of these two children. A strict linear dose response relation was not found for HGH.

With this method the growth rate profile can be studied in detail. Dose and time considerations in different treatments of growth disturbances can be analysed within shorter intervals and more accurate than with conventional statural gauge measurements.

**92** FRANK FALKNER\* (Intr. by H.K.A. Visser).

Fels Division of Pediatric Research, University of Cincinnati, United States. A single portable measuring device for both recumbent length and stature.

A device is presented, with illustrations of required techniques, that is used in one arrangement for the measurement of recumbent length, and in another of stature. The presentation includes the device's practicality, portability, suitability for use in the field or clinic, and data on replication of measurements.

The need for, and desirability of, obtaining reasonably accurate international data on length and height in greatly differing samples of infants, children, and adolescents is presented.

**93** D. VUKOVIĆ\* (Intr. by R. ILLIG). Institute of Maternal and Child Health, Novi Sad, Yugoslavia.

GROWTH OF OBESE CHILDREN.

Height data of obese children are compared with those of a group of normal school children by calculation of regression equations and correlation coefficients between height and age.

	control group	obese group
boys	N = 7,049	N = 477
	$\bar{X}$ = 10,97	$\bar{X}$ = 11,22
	$\bar{Y}$ = 142,70	$\bar{Y}$ = 146,09
	r = 0,86	r = 0,809
	y = 5,28x + 84,78	y = 4,644x + 94,321
girls	control group	obese group
	N = 6,454	N = 586
	$\bar{X}$ = 10,92	$\bar{X}$ = 11,41
	$\bar{Y}$ = 142,49	$\bar{Y}$ = 144,66
	r = 0,87	r = 0,816
	y = 5,40x + 83,522	y = 4,359x + 94,924

The characteristics of the regression lines indicate that with age the relative height advancement of obese children seems to diminish.

**94** P. GEORGES\*, A. BRIJAWI\*, D. EVAIN\*, M. SAVAGE\* and J.L. CHAUSSAIN, Hosp. St-Vincent de Paul, Paris, France. Binding capacity of serum Testosterone-Estradiol Binding Globulin (TeBG) in males: Variations with age and pathological conditions.

The binding capacity of TeBG was determined by polyacrylamid gel electrophoresis after preincubation of serum with 3H-dihydrotestosterone (3H-DHT). Steady state binding conditions were obtained by initial dissolving of 3H-DHT in the gel. In these conditions, the binding of 3H-DHT to TeBG was displaced by addition of unlabelled DHT. The saturation curve was determined by addition of increasing concentrations of 3H-DHT in serum incubates. At saturation, the TeBG binding capacity of serum (BC) expressed as  $\mu$ g p. cent ml was calculated from the peak of radioactivity. Mean  $\pm$  SD BC value was  $3.85 \pm 0.37$  in prepubertal boys and significantly lower ( $p < 0.01$ ) in adult men:  $1.47 \pm 0.6$ . In boys from birth to 6 months mean BC value was  $3.5 \pm 1.6$ , while it was only  $1.37 \pm 0.3$  in cord blood. In 2 boys with precocious puberty BC values were 0.34 and 1.6, and in 3 patients with complete testicular feminisation (TF) 4.41, 4.83 and 5.90. The association of a low BC and a high plasma testosterone level is concomitant of male pubertal development, while the association of a high BC with testosterone level in the adult range, present in TF and male new-borns, seems characteristic of a peripheral inactivity of testosterone.