BMC accretion and calcium retention in preterm infants.

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Growth and body composition of preterm infants: a longitudinal study from birth to 1 year of age. M Ouzzane, L Leke, G Krim, N Kalach, O Kremp, B Risbourg *(Pédiatrie II, CHU-Amiens, 80054 Amiens cedex, France)*

A study of growth and body composition in preterm infants (n = 45) was performed using anthropometric measurements until the age of 12 months corrected for prematurity. In order to determine the incidence and time of catch-up, they were compared to full-term infants (n = 35).

Body weight (g), height (cm), occipital frontal head circumference (cm) and mid-arm circumference (cm) were measured at birth, at 40 weeks, 4, 6 and 12 months gestation-corrected age by the same pediatrician. Body fat mass was calculated by adiposity indices (weight/height^3 x 100 at birth and weight/height^2 x 10 subsequently) and triceps skinfold thickness (mm). Lean body mass was estimated from upper arm muscle circumference (*AMC) and upper arm muscle area (**AMA), which were calculated from mid-arm circumference (MAC) and triceps skinfold thickness (TSKF) measured on the left midtriceps area by using the Holtain skinfold caliper.

Thirteen percent of preterm and 20% of term infants were breast-fed. Flour supplementation was observed in the second month for 90% of preterm and 76% of term.

We found a difference between preterm and term babies in weight and body mass index (BMI) at 40 weeks postconception; at 6 months, there were no significant differences. Descriptive statistics and estimated growth rates for weight, height, head circumference, plotted by sex, demonstrated greater rates of growth patterns in preterm infants in the first semester of life: weight gain: 770 ± 190 vs 650 ± 160 g/month; height gain: 2.84 ± 0.52 vs 2.74 ± 0.45 cm/month; head gain: 1.47 ± 0.26 vs 1.35 ± 0.13 cm/month ($P < 0.05$). However, the growth rate during the first year was less in preterm when compared to term infants. Muscle mass estimated by arm surface and area was not different at 6 or 12 months.

For BMI, we found that preterm infants with a low ponderal index (birth weight/length^3 x 100) less than the 10th percentile for age and sex experienced a higher growth rate that those with a ponderal index between the 10th and 90th percentile at 1 year: weight gain: 570 ± 90 vs 540 ± 80 g/month; height gain: 2.07 ± 0.3 vs 2.02 ± 0.25 cm/month; head gain: 1.03 ± 0.13 vs 0.91 ± 0.11 cm/month ($P < 0.05$). But despite this higher growth rate, preterm infants with low ponderal index still had a lower weight and BMI at 1 year of age. In term babies with low ponderal index (< P10) the postnatal growth rate at 1 year is lower than those with a higher ponderal index: weight gain: 400 ± 80 vs 606 ± 108 g/month ($P < 0.05$); height gain: 2.21 ± 0.3 vs 2.14 ± 0.2 cm/month (NS); head gain: 1.02 ± 0.17 vs 1.08 ± 0.17 cm/month (NS).

No correlation was detected between any of the infant feeding variables such as duration of breast-feeding, time of introduction of solid food and formula with the measures of growth rate or body composition.

* AMC(mm) = MAC – (3.14 x TSKF); ** AMA (mm^2) = [MAC – 3.14 (TSKF)]^2/4 (3.14).

Relationships between serum SHBG, body composition and dietary intake in premenopausal women. F Saint-Martin [1], S Dumoulin [1], I de Glisezinski [1], S Jamrozik [1], P Barbe [1], JP Thouvenot [2], B Perret [3], A Bennet [1], JP Louvet [1] *([1] Department*

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Serum sex hormone binding globulin (SHBG) levels depend on hormonal, metabolic and nutritional factors (Pugeat [1988] *Ann NY Acad Sci* 538, 235-247; Dumoulin [1995] *Eur J Endocrinol* 132, 594-598). They are decreased by obesity (Franks [1991] *J Steroid Biochem Molec Biol* 39, 835-838) and lipid intake (Reed [1987] *J Clin Endocrinol Metab* 64, 1083-1085).

We studied the relationships between SHBG, hormonal parameters, body mass index (BMI), body composition (body fat mass and trunk fat mass) and dietary intake in a group of 33 premenopausal women aged 27.6 ± 1.1 years (mean ± SE), with a BMI of 23.4 ± 0.8 kg/(m^2), without diabetes mellitus, thyroid dysfunction or pituitary disease. They had been referred for oligomenorrhea.

Body composition was evaluated using dual X-ray absorptiometry. Food diaries kept by the patients during the week preceding the collection of blood samples were analyzed with the REGAL programme (Inra, 1991). Blood samples collected on day 2–3 of a menstrual cycle after an overnight fast were used to evaluate SHBG (with an immunoelectrodiffusion assay provided by Sebia: Hydragel-SBP), insulin, testosterone (T), dehydroepiandrosterone-sulfate (DHEAS) and free thyroid hormones (FT4, FT3).

The SHBG level was negatively correlated with BMI ($r = -0.483$, $P < 0.01$), body fat mass (in %) ($r = -0.635$, $P < 0.001$), trunk fat mass ($r = -0.645$, $P < 0.001$) and percent calorie intake provided by lipids ($r = -0.387$, $P < 0.05$). No significant correlation was found between the SHBG levels and T, DHEAS, FT4, FT3, total daily calorie intake, percent calorie intake provided by carbohydrates or proteins. No significant correlation was found between the SHBG level and fasting insulin levels in this group of patients.

Stepwise regression using SHBG levels as variable and BMI, body fat mass, trunk fat mass and percent intake of lipids as covariates showed that the SHBG level was mainly dependent on trunk fat mass without any significant additional influence on the other x-variables.

In conclusion, even in patients referred for oligomenorrhea, SHBG levels were dependent on anthropometric and nutritional factors among whom the main one was the degree of abdominal obesity.

OBESITY

Dietary and metabolic differences between overweight patients with normal or elevated PAI-1 levels. S Dumoulin [1], I de Glisezinski [1], F Saint-Martin [1], S Jamrozik [1], P Barbe [1], P Sié [2], JP Thouvenot [3], A Bennet [1], JP Louvet [1] *([1] Department of Endocrinology; [2] Laboratory of Haemostasis; [3] Laboratory of Nutritional and General Biochemistry, hôpital Purpan, 31059 Toulouse cedex, France)*

Plasma plasminogen activator inhibitor type 1 (PAI-1), an inhibitor of fibrinolysis and a risk factor for myocardial infarction and deep venous thrombosis, is elevated in obese hyperinsulinaemic patients (Juhan-Vague [1993] *Thromb Haemost* 70, 138-143). The aim of the study was to determine the anthropometric, metabolic and dietary characteristics of overweight patients whose PAI-1 levels remained normal.

The patients were 64 premenopausal women aged 31.3 ± 1.2 years (mean ± SE) referred for elevated body weight, whose body mass index (BMI) ranged from 24 to 35 kg/m^2 (29.2 ± 0.4). No patient had dia-