Longitudinal study of whole body bone mineral content (BMCt) by DXA in very low birthweight (VLBW) infants. A Lapillonne [1], PM Braillon [2], M Chambon [1], FH Glorieux [3], BL Salle [1] *([1] Department of Neonatology; [2] Department of Rhumatology, Édouard-Herriot Hospital, Lyon, France; [3] Genetics Unit, Shriners Hospital, McGill University, Montreal, PQ, Canada)*

Dual energy X-ray absorptiometry (DXA) is a non-invasive, accurate and precise method for assessing bone mineral content (BMC). The introduction of this technique in the pediatric fields is recent. The low irradiation level allows longitudinal studies. New technical developments of DXA systems now provide the possibility to study the entire skeleton.

Twenty-five VLBW infants (mean gestational age ± SD = 30.8 ± 2.6 weeks, mean birthweight ± SD = 1 232 ± 1 37 g) (9 boys, 16 girls) were studied over a 6 month period. During the first 3 months of life, 10 infants received their own mother's milk enriched with a fortifier (Eoprotin), and the 15 others were fed a preterm formula (Premilumel). Then, they received a regular formula. All the babies received 1 500 UI per day of vitamin D3 during the first 2 months of life and then 1 000 UI per day up to 6 months of age. The scans were performed with a QDR 1000 W densitometer (HOLOGIC Inc, Waltham MA; pediatric software 5.47) at 3 months postnatal age (corrected gestational age of 42 ± 2.6 weeks) and 6 months postnatal age.

At 3 months of age the mean BMCt of the premature babies (43.3 ± 30.8 g of hydroxylapatite (HAP)) was significantly lower than that of full term newborns at birth (62.4 ± 18.3 g HAP). At 6 months of age, the infants had a mean value of BMCt of 168.6 ± 36.6 g HAP, which is comparable to the value of full term newborns at the same postnatal age.

There was no significant difference in BMCt according to diet at any time. Although at 3 months of age, the infants fed fortified human milk had a higher mean BMCt (54.6 ± 22.9 g HAP) than those fed the preterm formula (35.8 ± 33.8 g HAP), the wide variation observed between 2 groups did not allow the difference to reach significance.

This study of the whole body BMC in VLBW infants, as assessed by DXA, demonstrated an osteopenia at 3 months of age. There was no significant diet influence. However, the mean BMCt value of the infants fed fortified human milk was higher than that of the infants fed a preterm formula. At 6 months of age, the BMC reached a value similar to that of full term newborns and there was no significant difference between the 2 diet groups.

Fat-free mass and autonomy of free-living elderly people. A Pradignac, JL Schlienger *(Hôpital de Hautepierre, Service de médecine interne, 67098 Strasbourg, France)*

Preserving elderly people's autonomy is a real challenge in industrial eras. Many studies have emphasized the importance of maintaining a good level of fat-free mass to reach this goal. We studied the relationship between fat-free mass and functional or cognitive capacities of free-living elderly people.

We report the results of a survey carried out in the department of Bas-Rhin (the eastern part of France), concerning 226 males and 215 females, aged over 65 years without serious illness and free-living. They were randomly selected after stratification on sex, age and residence (rural or urban). For each subject, the ability to walk outside home (AWOH) was evaluated by the Géronte scale, the cognitive functions by the mini-mental state examination (MMSE), the fat mass by the body mass index (BMI) and fat-free mass by the brachial muscular circumference (BMC) derived from Jeliffe's

equation. For men, a stepwise backward logistic regression including age, revealed a strong negative relationship between age and MMSE (odd ratio (OR) = 0.18; $p < 0.001$), and age and AWOH (OR = 0.32; $p < 0.01$). This last parameter was negatively linked to the BMI (OR = 0.36; $p < 0.05$) and positively to the BMC (OR = 4.77; $p < 0.01$). For women, the same kind of relationship was found between age and MMSE (OR = 0.21; $p < 0.001$), and age and AWOH (OR = 0.14; $p < 0.001$). BMI was positively related to MMSE (OR = 2.43; $p < 0.05$) and AWOH (OR = 2.94; $p < 0.05$). No link between the BMC and the functional or cognitive variables could be pointed out.

In conclusion, aging is the most powerful and the most constant parameter that explains the cognitive and functional impairments in free-living elderly people. An adequate level of fat-free mass contributes to the preservation of the physical capacities of men but not women. In both sexes, fat-free mass has no effect upon cognitive functioning. The physical and cognitive profiles are better in overweight women.

A family approach to risk factors for nutritionally linked diseases: the 'Fleurbaix Laventie Ville Santé' (FLVS). D Boute, JM Borys, MA Charle, F Thomas, C Toursel, E Eschwege, P Fossati *(Fleurbaix Laventie Ville Santé Association, 22, rue du 11-Novembre, 62840 Laventie; INSERM Unit 21, 94800 Villejuif, France)*

An epidemiological study aiming to locate the risk factors of nutritionally linked diseases over 3 generations is taking place in Fleurbaix and Laventie, 2 towns in the Pas-de-Calais area of France. The families are contacted through the list of children attending school. They complete a family tree enabling the different members to be identified. The clinical parameters recorded are weight, height, 4 skin folds, brachial circumference, waist circumference, hip circumference, blood pressure, pubertal development and vascular examination. The triglycerides, total cholesterol and glycemia levels are analysed by a capillary technique with the aid of Reflotron. A dietary survey is carried out (a record of the food consumed over 3 d for adults and a record for 1 d for children, in conjunction with a questionnaire of weekly frequency of consumption).

The participation rates in the survey were as follows: 95% consented to participate in the study; 85.2% to the completion of family trees; 83% to participation in the dietary survey. The first results concerned 362 boys aged 8.2 ± 1.8 years and 339 girls aged 8.1 ± 1.8 years. The waist to hip ratio (WHR) was significantly lower in girls than in boys (0.83 ± 0.05 *vs* 0.86 ± 0.04, $p = 0.0001$). This difference was evident from the age of 5 years. The proportion of triglyceridemia exceeding 0.70 g/L (Relfotron's sensitivity threshold) was significantly higher in girls than in boys (56 *vs* 47%, $p = 0.02$). Glycemia, total cholesterol and blood pressure were not different. There was no correlation between the WHR and the blood pressure, glycemia and triglyceridemia levels. Glycemia was nevertheless significantly higher in children with triglycerides above 0.90 g/L (75th percentile) after adjustment for age or BMI (average adjusted 0.87 *vs* 0.91 g/L, $p = 0.02$). The preliminary data from the FLVS study revealed that the WHR in the prepubescent child does not have the same significance as in the adult. The relationship between glycemia and triglycerides could be the first to appear. The family context and the nutritional environment will allow a better understanding of the significance of this relationship.

Effects of a protein-restricted diet upon hepatic production of glucose in chronic renal failure. V Blanchetier, V Rigalleau, C Combe, M Aparicio, H Gin