and smoking ($\beta = -0.26$, $P = 0.01$). These results confirm that, in nutritional management of gestational diabetes, carbohydrate intake has to be higher than 200 g/day and that fat intake must be restricted.

Growth and nutrition of children of Maghrebian origin living in Paris area. F Rovillé-Sausse *(Laboratoire d'anthropologie biologique, Musée de l'Homme, place du Trocadéro, 75116 Paris, France).*

Nutritional investigations made among the Maghrebian population living in France showed a progressive change in the habits, the traditional Mediterranean diet becoming more western, especially among young people. The purpose of this study was to evaluate the influence of the diet on the growth of children born in France, whose both parents immigrated from Maghreb.

— Method: In this longitudinal study, we enrolled 300 children from Maghrebian parents and 320 French children, under 6 years of age. They were regularly followed by paediatricians in the centres of 'Protection Maternelle et Infantile' (PMI) of the Parisian area. The successive biometric data (height, weight, etc) were collected in their medical files, from birth, each month during the first year, every 2 months during the second year, then every 6 months. About 15 000 measurements were collected. The means of height, weight and body mass index (BMI) were computed for each age class. The BMI (W/H^2) is a good index of the nutritional status of the children, and its dynamic analysis can predict a possible obesity.

— Results: At birth, no difference was observed in height, weight and BMI between both populations ($P > 0.05$). From the first weeks of life, the BMI means of children from Maghrebian immigrated parents were significantly higher ($P < 0.01$) than those of French children. At 1 year of age, 23% of the Maghrebian BMI were greater than the percentile 90 for the reference French population. Of these obese Maghrebian children, 28% showed a precocious adiposity rebound between 30 and 36 months of age (reference value is about 72 months).

— Interpretation: These results point to the risk of obesity in children of Maghrebian parents living in Paris. They might be interpreted as a consequence of the change in diet habits. 77 % of the Maghrebian newborns are exclusively breastfed at birth, but because an obese baby in this population is regarded as being in good health, mothers give readily cereals in addition of breastfeeding, which carries a faster growth of weight due to a supply of energy intake. When solid food is progressively introduced, many people think that 'westernalization' of food is a good sign of social integration, favourable to the health. In fact, they introduce nutritional imbalances: for example, a high intake of meat, a considerable supply of saturated fats (butter) takes the place of mono- and poly- insaturated fats (olive oil). The BMI growth of children of immigrated Maghrebian parents showed an evident overweight at each age, which could have an influence on precocious obesity and cardiovascular risks.

Tumor growth and oxidant-antioxidant status. M Gerber [1], C Astre [1], C Ségala [1], M Saintot [1], J Scali [1], J Simonny-Lafontaine [2], J Grenier [2], H Pujol [2] *([1] Groupe d'épidémiologie métabolique; [2] Centre anti-cancéreux, 34000 Montpellier, France).*

Several lines of evidence suggest an alteration of the oxidant-antioxidant status in cancer. The biochemical analyses of experimental tumors show high levels of antioxidants and low levels of polyunsaturated fatty acids (PUFA) resulting in a low potential for lipid peroxidation. Such an alteration has been found in human cancer patients either in the plasma of breast cancer

[Gerber et al (1989), *Cancer* 64, 2347-2353] or in the tumor tissues of other cancer sites [Di Ilio et al (1987), *Carcinogenesis* 8, 281-284]. Other studies demonstrate that PUFA were cytotoxic for tumor cells [Begin et al (1988), *J Natl Cancer Inst* 80, 188-194]. Furthermore, it was reported such a cytotoxic effect of PUFA in highly proliferating normal cells which was opposed by antioxidants [Cogrel et al (1993), *Lipids* 28, 115-119]. These findings suggest that the balance between oxidants and antioxidants might take a part in the proliferation regulation of normal as well as transformed cells.

We investigated this hypothesis with a clinical approach asking: 1) whether the profile 'low peroxidation products/high antioxidants' is associated with all cancers, food related cancers, and/or hormono-dependent cancers; 2) whether it could explain the slow evoluting cancers in older patients, since aged people are known to show a higher level of lipid peroxidation.

We conducted a case-control study to answer the first question with 269 hospital-based controls (34 to 86 years old) and 146 cases (43 to 86 years old). We assessed tumor aggressiveness based on tumor size, node invasion and metastasis. Cholesterol, triglycerides, vitamine E, and malon-dialdehyde (MDA) were measured in plasma.

The change in oxidant-antioxidant status was not associated with a specific cancer site, but observed in advanced cancers: vitamin E concentration increased and MDA decreased with tumor size and node invasion. We conducted a transversal study on 365 breast cancer cases to answer the second question. Assessment of tumor aggressiveness was based on pathology, estrogen receptors (ER), tumor size and node invasion. There was no metastatic patients (DNA and proliferation index are recorded but not yet analyzed). Biochemical measurements were done before therapy: cholesterol, triglycerides, vitamine E, glutathion peroxidase, selenium, and MDA. The analysis of this transversal study on breast cancer confirmed the association of the profile 'low peroxidation products/high antioxidants' with tumor aggressiveness and/or progression, based on pathology diagnosis, size and ER. It showed also that less aggressive tumors are prevalent in aged patients, compared with young ones, and that the profile 'low peroxidation products/high antioxidants' is always less marked in aged than in young patients. However, this association does not imply a causal relationship.

As a whole, these data suggest that tumor growth is reflected in the plasma by the profile 'low peroxidation products/high antioxidants'. This seems to be true for all tumor sites. This may be the consequense of an adaptative response of tumor cell towards a selective growth advantage.

To what extent exogenous (nutritional) oxidants and anti-oxidants might interfere? In experimental studies very high intake of vitamin E opposed the regulatory effect of increased lipid peroxydation on tumor growth [Gonzales et al (1991), *Carcinogenesis* 12, 1231-1235]. In epidemiological ecological [Kaiser et al (1989) *Nutr Cancer* 12, 61-68] and prospective [Vatten et al (1990), *Int J Cancer* 46, 12-15] studies, high intake of fish, which contains large amount of *n*–3 PUFAs, was associated with a lower incidence of cancers.

Retinoic acid inhibits insulin-induced cyclin D1 gene expression in T47D breast cancer cells. L Razanamahefa, C Costa, S Bardon *(Laboratoire de nutrition et sécurité alimentaire, Inra, 78350 Jouy-en-Josas, France).*

The vitamin A derived retinoids are evaluated as preventive and therapeutic agents for breast cancer. They have been shown to inhibit the in vitro proliferation of several breast carcinoma cell lines, but the mecha-