outcome at 5 years in babies born < 30 weeks. Our findings extend their work by suggesting that longitudinal FT4 levels are an independent factor affecting brain growth in babies born < 28 weeks.

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LONGITUDINAL CHANGE OF LIVER FAT IN OBESE CHILDREN AFTER A 12-MONTHS NUTRITIONAL INTERVENTION

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Objective: To evaluate whether an one-year nutritional-behaviour intervention based on normocaloric balanced diet and physical exercise may reduce the liver fat in obese children.

Methods: Twenty-six obese children (11 males and 15 females), aged 6-14 years, underwent anthropometic, nutritional, metabolic and liver magnetic resonance imaging (MRI) examinations at baseline and after an one-year nutritional-behaviour intervention. Anthropometry included weight, height, waist and hip circumference and total upper arm area. Body mass index (BMI) z-scores were calculated. Biochemistry included serum aminotransferases, lipid profile, glucose and insulin. Liver steatosis was judged as hepatic fat fraction (FF) by MRI was ≥ 9%.

Results: Prevalence of steatosis was 34.6 % at baseline and declined to 7.7 % after intervention (P< 0.0001). Mean (95% CI) reduction of liver FF was 8.0 (4.0-12.0) %. In 77.8% of children with liver steatosis at baseline the FF declined lower than 9% at the end of intervention, going from a mean [SD] of 18.7 [9.1] % to 1.3 [4.1] %, (P< 0.0001). At the end of the intervention children showed a mean reduction in BMI z-score of 0.26 (0.11-0.41), and waist circumference of 1.46 (0.34-2.60) cm. Triglycerides, total cholesterol, ApoA1, ApoB, ApoA1/ApoB ratio and gamma-GT plasma values in plasma decreased at the end of intervention (P< 0.05).

Conclusions: The results suggest that in obese children nutritional-behaviour interventions may reduce the liver fat.

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VALIDATION OF BIOELECTRICAL IMPEDANCE ANALYSIS WITH A THREE-COMPONENT MODEL OF BODY COMPOSITION IN 4-7 YEAR OLD CHILDREN

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Field methods to assess body composition in young children are scarce. The aim of this study was to validate bioelectrical impedance analysis (BIA) with the three-component (3C) model of body composition in primary school children.

We examined fifty-six 4-7 year old children, 36% boys. Total body water estimated by BIA was compared with deuterium dilution. An established equation was recalibrated using a validation sample of 36 children which was subsequently cross-validated in an independent sample of 20 children. Furthermore, commonly used gender-specific hydration constants for the conversion of total body water into fat free mass were compared to those calculated with the 3C model.

Compared to deuterium dilution, BIA for school age children underestimated total body water by 0.51 kg (p=0.002) and this varied across the range of TBW (r= 0.41; p=0.002). Recalibration of the equation yielded: Total body water = 0.439 ($Height^2$/Resistance) + 0.027 Wt + 4.014 (R^2 = 0.74, SEE = 0.96 kg). Application of this equation in the independent sample of 20 children showed a non-significant bias in total body water (mean bias -0,40 kg, p=0.223). This bias was not variable (r= -0.11; p=0.648). Hydration constants calculated with the 3C model were comparable to recently proposed hydration constants.

In conclusion, these data indicate that BIA underestimates total body water in 4-7 year old children, when using the Kushner equation for school age children. This underestimation is non-systematic. Recalibration and cross-validation enables more robust assessment of body composition for routine survey and clinical use in (pre)school aged children.