

BODY COMPOSITION IN CHILDREN AND YOUNG PATIENTS AFFECTED BY CHRONIC DISEASES

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PATIENTS & METHODS

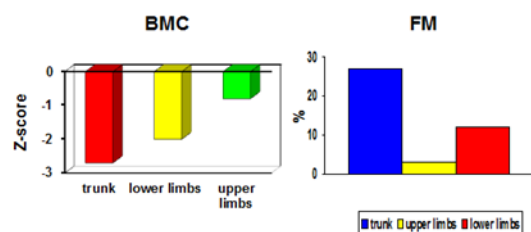
We analyzed body composition (DXA, Hologic) in 334 young patients (aged 3-24 years) with chronic diseases, most of them on long-term glucocorticoid (GC) treatment, and monitored its changes over 3 to 14 years (6.9±6.2 years).

Bone Mineral Content (BMC), Fat Mass (FM) and Fat-Free Mass (FFM) were measured on Total Body Less Head (TBLH), trunk, upper limbs, lower limbs. Regional values of BMC, FM, FFM were expressed as percentages of total and compared with age- and sex-matched healthy Italian controls. Body Mass Index (BMI) was also measured.

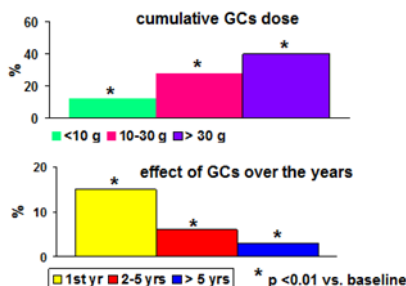
RESULTS

In 159 patients with nephrotic syndrome, connective tissue diseases, asthma, autoimmune hepatitis, or transplants, GCs had major effects on trunk BMC and FM, related to cumulative dose. Independently of disease and age, BMC decrease and FM increase were higher during the first year of treatment, and continued more slowly thereafter.

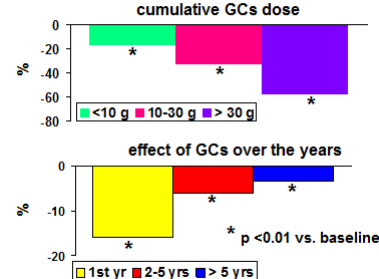
159 children/adolescents (3-20 yrs)



Increase of trunk fat

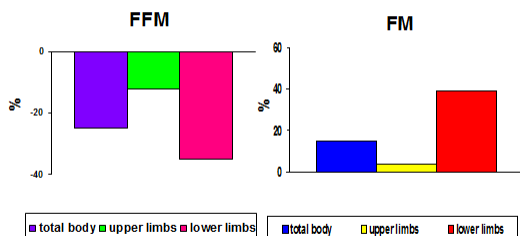


Reduction of trunk BMC

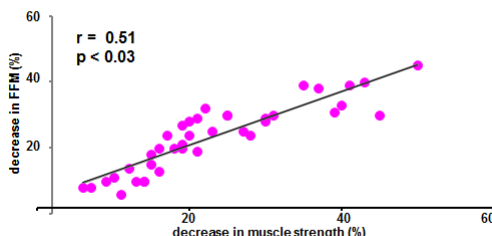


In 39 walking boys with Duchenne Muscular Dystrophy (DMD), BMC was low for age, and more reduced at lower than upper limbs. At lower limbs, FM progressively increased and FFM decreased over time. The FFM decrease correlated with changes in muscle strength (evaluated by Manual Muscle Testing, MRC scale).

39 boys with DMD (4-15 yrs): body composition changes

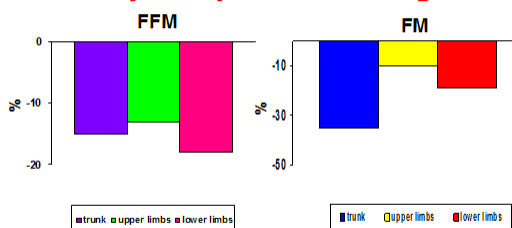


Decrease of lower-limb FFM vs. decrease of muscle strength

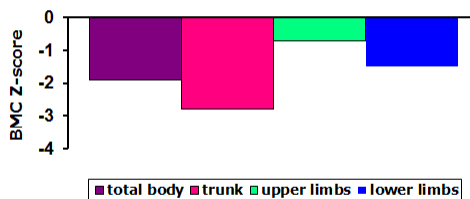


In 136 patients affected by Cystic Fibrosis (CF), body composition analysis showed decreased FFM and FM with respect to controls in both sexes, for both TB and the 3 sub-regions. We observed significant correlations of BMI, FM, FFM with trunk BMC (FM showing the highest correlation); in addition, of BMI with FFM; of FFM with both TB BMC and lower-limbs BMC, as well as with FEV₁, a pulmonary function index.

136 CF patients (3-24 yrs): body composition changes



BMC in patients with CF



Correlations

	FFM	TB-BMC	Lower-limb BMC	Trunk BMC	FEV ₁
BMI	0.62 <0.01	0.18	0.23	0.43 <0.05	0.29
FM	-	0.14	0.1	0.61 <0.01	0.17
FFM	-	0.64 <0.01	0.56 <0.02	0.49 <0.05	0.61 <0.01
FEV ₁	0.61 <0.01	0.09	0.18	0.50 <0.03	-

CONCLUSIONS

In children and young patients, body composition analysis is a powerful tool to evaluate the disease-related deviations from normal, to demonstrate the GC influence on BMC, FM, and FFM, to highlight the relationship between muscular strength/activity and bone.