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Serum C3c and C4c concentrations and adenosine deaminase activity of children with cystic fibrosis: preliminary study

P. Perris¹, M. S. Feliu¹, S. Barbeito², I. Strasnoy², M. Ferraro² and N. Slobodianik²¹Department of Nutrition, School of Pharmacy and Biochemistry, University of Buenos Aires, Argentina and²Nutrition Service, Pedro Elizalde Hospital, Buenos Aires, Argentina

Nutrition is a critical component of the management of cystic fibrosis (CF), and nutritional status is directly associated with both pulmonary status and survival⁽¹⁾. Previous results have shown that several serum fractions (apoB, transferrin) related to the nutritional status of children with CF are diminished⁽²⁾. The present preliminary study measured in the same group of children specific serum proteins associated with the immune system and the activity of adenosine deaminase (ADA), an enzyme associated with T lymphocytes^(3,4). Sixteen children of both genders with CF, between 5 months and 11 years of age, were evaluated between September 2005 and February 2007, with assistance from the Nutrition Service. Samples of whole blood were collected from fasting patients. C3 and C4 complement fractions (C3c, C4c) were measured by single radial immunodiffusion techniques using commercially-available kits (Diffuplate; Bio-cientifica, Buenos Aires, Argentina)⁽⁵⁾. The activity of ADA was determined by the method of Giusti & Galanti⁽⁶⁾. The results were compared with reference values obtained from healthy children matched for age and gender.

Group	C3c (mg/l)		C4c (mg/l)		ADA (U/l)	
	Mean	SD	Mean	SD	Mean	SD
CF	882*	356	183*	42	36.3*	15.8
Reference	1263	455	275	77	23.0	5.6

Mean values were significantly different from those for the reference group: *0.001 < P < 0.02.

Significantly decreased C3c and C4c values with a concomitant increase in the activity of ADA were observed in patients with CF. The increase in the activity of ADA would be an alternative mechanism to avoid the accumulation of high levels of deoxynucleotides, which would be toxic for T-cell lymphocytes⁽⁴⁾. These preliminary results suggest that the immune system, evaluated using serum levels of C3c and C4c and the activity of ADA, is altered. Specific nutritional support should be established and adjusted to individual needs.

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