

Letter to the Editor

Allergic Bronchopulmonary Aspergillosis with Normal Serum IgE in a Child with Cystic Fibrosis

To the Editor:

In 1971^{1,2} the developmental patterns and serum immunoglobulin E (IgE) levels in mothers and their infants were reported and an inheritance hypothesis was presented. We described serum IgE as stable over a period of months to years and that basal serum IgE levels are under simple Mendelian genetic control. In 1974,³ utilizing human twin studies, we confirmed and elaborated on the genetic control of human serum IgE levels. The conclusion of these and several other studies in our laboratories was essentially that basal serum IgE levels would be found to be constant in a given individual at a high, intermediate, or low level. When perturbed by a stimulus such as allergy, insect sting, worm infestation, or allergic bronchopulmonary aspergillosis, the elevated serum IgE would tend to return to its basal level when the stimulus was removed or treatment was successful. The height of the response was dependent on the basal level.

The case report, "Allergic Bronchopulmonary Aspergillosis with Normal Serum IgE in a Child with Cystic Fibrosis" (D. Dorsaneo et al., *Pediatr Asthma, Allergy & Immunol* 2004; **17**:146–150), does not take into consideration that this child's normal serum IgE level was in the "low" range at ~ 20 IU/mL. When her disease flared, her serum IgE level rose to 150 IU/mL and 280 IU/mL. With appropriate therapy, it returned to her normal level of 15–20 IU/mL.

We classified basal serum IgE levels as in the following chart:

	<i>In newborns</i>	<i>In children and adults</i>
Low	<6	<60
Intermediate	10–20	60–200
High	21–60	211–450
Very high	>60	>450

Patients with intermediate or high "basal" levels responded to allergic bronchopulmonary aspergillosis (ABPA) with levels "expected" by the authors, that is, greater than 1,000 IU/mL. But independent of the disease, cystic fibrosis, adults or children with basal levels less than 60 IU/mL will rarely reach levels greater than a few hundred IU/mL due to any stimulus.

Furthermore, we reported⁽⁴⁾ the frequency of atopy as a function of basal serum IgE level and provided theoretical percent atopic in an unselected population as follows:

<i>Serum IgE level</i>	<i>Percent atopic</i>	<i>% of Population</i>
Low	~5	67
Intermediate	20	21
High	35	9
Very high	~100	<3

We also noted in our Allergy Immunology Clinic in collaboration with the Cystic Fibrosis Clinic in that same era that the two diseases independently assorted and were thus not genetically linked. Dr. Dorsaneo *et al.* imply that the IgE level did not rise because of the cystic fibrosis. We would suggest that their patient was not genetically prone to allergy and was not genetically prone to produce a markedly elevated level of serum IgE for the same reason. Their patient also might not produce the expected IgE response to *Ascaris*.

RESPONSE TO LETTER TO THE EDITOR

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Response

To the Editor:

We appreciate Dr. Hamburger's observation that that serum IgE tends to be fairly stable over a period of months to years. This serves to reinforce our central assertion that a significant change from baseline should trigger concerns about possible allergic bronchopulmonary aspergillosis (ABPA), rather than waiting for the IgE level to rise above an arbitrary cut point.¹ A variety of immunologic factors may contribute to the development of ABPA, including a Th2 response with secretion of interleukin-4 and inheritance of certain major histocompatibility complex alleles, as noted in our case report. There is evidence that atopic children with cystic fibrosis are at substantially greater risk of ABPA than nonatopic patients.² Although a range of factors has been associated with ABPA, no single factor predicts its occurrence; therefore, ABPA should be considered in all patients with CF who have a change in baseline IgE associated with clinical decline. As noted by Dr. Hamburger, the absolute rise will likely not be high in those whose baseline IgE is in the nonatopic range.

REFERENCES

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1. 2005. LiteratureWatchLiteratureWatch. *Pediatric Asthma, Allergy Immunology* **18**:2, 115-117. [[Citation](#)] [[PDF](#)] [[PDF Plus](#)]