

Allergic Bronchopulmonary Aspergillosis (ABPA)

Test Name: Allergic Bronchopulmonary Aspergillosis (ABPA)

Test Codes: ABPA I Panel # 403015
ABPA II Panel # 403016

Background: ABPA is a hypersensitivity disease of the lungs caused by *Aspergillus fumigatus*. It is an important complication for patients with asthma and cystic fibrosis^(1,2). Diagnosis involves clinical, immunologic and radiographic criteria and no single test is sufficiently discriminating. According to Stevens et al "ABPA is underdiagnosed; prospective studies indicate that 7 to 14 percent of patients with corticosteroid-dependent asthma meet the generally accepted definitions, as do 6 percent of patients with CF."⁽¹⁾ Individuals with the HLA DR2 and HLA DR5 haplotypes appear to be predisposed to ABPA⁽³⁾.

Description: The ABPA panel includes serological tests that are useful in the evaluation of this disease. The disease is characterized by intense immunologic reactivity to the antigens of *Aspergillus fumigatus*. The diagnostic features of ABPA include the following:

- (1) Episodic air way obstruction and wheezing
- (2) Eosinophils in sputum and blood
- (3) *Aspergillus*-specific IgE
- (4) *Aspergillus*-specific IgG by FEIA
- (5) Precipitins to *Aspergillus* antigens
- (6) Positive sputum cultures
- (7) Elevated total IgE
- (8) Episodic fever and pulmonary infiltrates
- (9) Central bronchiectasis

Refer to the review by Greenberger⁽²⁾ for more detail.

Tests Available:

The ABPA I panel (# 403015) includes the following:

	Method	CPT Code
<i>Aspergillus fumigatus</i> IgG	FEIA	86606
<i>Aspergillus fumigatus</i> IgE	FEIA	86003
Total Serum IgE	FEIA	82785

The ABPA II panel (# 403016) includes the following:

	Method	CPT Code
<i>Aspergillus fumigatus</i> Mix Precipitins	Gel Diffusion	86331
<i>Aspergillus fumigatus</i> IgG	FEIA	86606
<i>Aspergillus fumigatus</i> IgE	FEIA	86003
Total Serum IgE	FEIA	82785

These tests may be ordered individually.

Specimen Requirements: 1.5 mL serum. Ship at ambient temperatures.

Units and Reference Ranges Reported:

Test	Units	Normal Range
<i>Aspergillus</i> Ppt	Pos/Neg	Negative
<i>Aspergillus</i> -IgG	mcg/mL	By report
<i>Aspergillus</i> -IgE	kU/L	< 0.35
Total IgE	IU/mL	Age Adjusted

Interpretation: The typical serological profile for a patient with ABPA is to have positive precipitins and an *Aspergillus*-specific IgG significantly in excess of the reference value for normals, an *Aspergillus*-specific IgE greater than 17.5 kU/L, and a total IgE well above 500 IU/mL. The total IgE can sometimes be in excess of 5,000 IU/mL. However, the values may be lower if the patient has been receiving corticosteroids for an extended period of time. It should be noted that the diagnosis cannot be made on the basis of the serological findings alone⁽³⁻⁷⁾. Further, modest elevations in *Aspergillus*-specific IgG also are found in individuals who have significant exposure at home or at work. Recent reports have emphasized the importance of both the precipitin and quantitative IgG test for *Aspergillus* antibodies⁽⁸⁾.

References:

1. Stevens DA et al. A randomized trial of itraconazole in ABPA. *NEJM* 2000; 342: 756-762.
2. Greenberger PA. Allergic bronchopulmonary aspergillosis. *JACI* 2002; 110:685-692.
3. Shoham S and Levitz SM. Immune responses to fungi in "Clinical Immunology Principles and Practice" Rich et al, editors. Second Edition, 2002
4. Patterson, R., et al. A radioimmunoassay index for allergic bronchopulmonary aspergillosis. *Annals of Internal Medicine* 99:18-22 (1983).
5. Copley, JB and McDonnell, JT. Allergic broncho-pulmonary aspergillosis: A case report and comment on reliability of testing sources. *Annals of Allergy* 53: 50-54 (1984).
6. Smith, JMB and Derks AA. Serological tests in the diagnosis of pulmonary aspergillosis. *Pathology* 16:184-188 (1984).
7. Shale, DJ and Faux, JA. The evaluation of a quantitative enzyme-linked immunosorbent assay (ELISA) for anti-*Aspergillus fumigatus* IgG. *Journal of Immunological Methods* 77: 197-205 (1985).
8. Hutcheson PS and Slavin RG. Correlation of serum precipitins and IgG anti-*Aspergillus fumigatus* determined by fluoroenzymeimmunoassay. *J Allergy Clin Immunol* 2003; 11(Supplement):S294.

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