MAYO CLINIC LABORATORIES

Test Definition: IGAS

IgA Subclasses, S

Overview

Useful For

Investigation of immune deficiency due to IgA2 deficiency

Evaluating patients with anaphylactic transfusion reactions

Method Name

Nephelometry

NY State Available

Yes

Specimen

Specimen Type

Serum

Specimen Required

Container/Tube:

Preferred: Red top

Acceptable: Serum gel

Specimen Volume: 1 mL

Reject Due To

Gross hemolysis	OK
Gross lipemia	Reject
Gross icterus	OK

Specimen Minimum Volume

0.5 mL

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Serum	Refrigerated (preferred)	7 days	
	Ambient	7 days	
	Frozen	7 days	

Clinical & Interpretive

Clinical Information

IgA, the predominant immunoglobulin secreted at mucosal surfaces, consists of 2 subclasses, IgA1 and IgA2. IgA1 is the major (approximately 80%) subclass in serum. IgA2 is the major subclass in secretions such as milk. Although IgA deficiency is a common defect (1 in 700), it is usually asymptomatic. IgA deficiency with or without IgG subclass deficiency, however, can lead to recurrent pulmonary and gastrointestinal infections. Some infections (eg, recurrent sinopulmonary infections with *Haemophilus influenzae*) may be related to a deficiency of IgA2 in the presence of normal total IgA concentrations.

Paradoxically, bacterial infections may also cause IgA deficiency. For example, IgA1 (but not IgA2) can be cleaved and inactivated by certain bacteria, thus depleting the majority of the IgA. In the presence of a concurrent IgA2 deficiency, infection by these organisms results in an apparent IgA deficiency.

IgA deficiency is 1 cause of anaphylactic transfusion reactions. In these situations, IgA-deficient patients produce anti-IgA antibodies that react with IgA present in the transfusion product. While transfusion reactions typically occur in patients who have no detectable levels of IgA, they can occur in patients with measurable IgA. In these situations, the complete deficiency of 1 of the IgA subclasses may be the cause of the transfusion reactions.

Reference Values

IgA

0-<5 months: 7-37 mg/dL

5-<9 months: 16-50 mg/dL

9-<15 months: 27-66 mg/dL

15-<24 months: 36-79 mg/dL

2-<4 years: 27-246 mg/dL

4-<7 years: 29-256 mg/dL

7-<10 years: 34-274 mg/dL

10-<13 years: 42-295 mg/dL

13-<16 years: 52-319 mg/dL

16-<18 years: 60-337 mg/dL

> or =18 years: 61-356 mg/dL

IgA1

0-<5 months: 10-34 mg/dL

5-<9 months: 14-41 mg/dL

9-<15 months: 20-50 mg/dL

15-<24 months: 24-58 mg/dL

2-<4 years: 16-162 mg/dL

4-<7 years: 17-187 mg/dL

7-<10 years: 21-221 mg/dL

10-<13 years: 27-250 mg/dL

13-<16 years: 36-275 mg/dL

16-<18 years: 44-289 mg/dL

> or =18 years: 50-314 mg/dL

IgA2

0-<5 months: 0.4-5.5 mg/dL

5-<9 months: 1.5-6.2 mg/dL

9-<15 months: 2.8-7.0 mg/dL

15-<24 months: 3.9-7.7 mg/dL

2-<4 years: 1.3-31.1 mg/dL

4-<7 years: 1.1-39.1 mg/dL

7-<10 years: 1.4-48.0 mg/dL

10-<13 years: 2.6-53.4 mg/dL

13-<16 years: 4.7-55.1 mg/dL

16-<18 years: 6.6-54.3 mg/dL

> or =18 years: 9.7-156.0 mg/dL

Interpretation

Low concentrations of IgA2 with normal IgA1 levels suggest an IgA2 deficiency.

Elevated concentrations of IgA2 with normal or low amounts of IgA1 suggest a clonal plasma cell proliferative disorder secreting a monoclonal IgA2.

Increased total IgA levels also may be seen in benign disorders (eg, infection, inflammation, allergy), hyper IgD syndrome with periodic fever and monoclonal gammopathies (eg, myeloma, monoclonal gammopathies of undetermined significance [MGUS]).

Cautions

Quantitation of specific proteins by nephelometric means may not be possible in lipemic sera due to the extreme light scattering properties of the specimen. Turbidity and particles in the specimen may result in extraneous light scattering signals, resulting in variable specimen analysis.

Clinical Reference

1. Schauer U, Stemberg F, Rieger CHL, et al: Establishment of age-dependent reference values for IgA subclasses. Clin Chim Acta 2003;328:129-133

2. Saulsbury FT: Hyperimmunoglobulinemia D and periodic fever syndrome (HIDS) in a child with normal serum IgD, but increased serum IgA concentration. J Pediatrics 2003:127-129

3. Popovsky MA: Transfusion Reactions. American Association of Blood Banks, Third edition, 2007

Performance

Method Description

In this Siemens Nephelometer II method, the light scattered onto the antigen-antibody complexes is measured. The intensity of the measured scattered light is proportional to the amount of antigen-antibody complexes in the sample under certain conditions. If the antibody volume is kept constant, the signal behaves proportionally to the antigen volume.

A reference curve is generated by a standard with a known antigen content on which the scattered light signals of the samples can be evaluated and calculated as an antigen concentration. Antigen-antibody complexes are formed when a sample containing antigen and the corresponding antiserum are put into a cuvette. A light beam is generated with an LED, which is transmitted through the cuvette. The light is scattered onto the immuno-complexes that are present. Antigen and antibody are mixed in the initial measurement, but no complex is formed yet. An antigen-antibody complex is formed in the final measurement.

The result is calculated by subtracting value of the final measurement from the initial measurement. The distribution of intensity of the scattered light depends on the ratio of the particle size of the antigen-antibody complexes to the radiated wavelength.(Unpublished Mayo method; Instruction manual: Siemens Nephelometer II, Version 3, Siemens, Inc., Newark, DE, 2008)

PDF Report

No

Specimen Retention Time

14 days

Performing Laboratory Location

Rochester

Fees & Codes

Test Classification

This test has been cleared, approved, or is exempt by the US Food and Drug Administration and is used per manufacturer's instructions. Performance characteristics were verified by Mayo Clinic in a manner consistent with CLIA requirements.

CPT Code Information

82784

82787 x 2

LOINC® Information

Test ID	Test Order Name	Order LOINC Value
IGAS	IgA Subclasses, S	87552-6

Result ID	Reporting Name	LOINC®
IGA_	IgA	2458-8
IGA1_	IgA1	6886-6
IGA2_	IgA2	6939-3