Immune Mechanisms and Infertility

THREE IMMUNE MECHANISMS are currently considered to be causes of human infertility. These include autoimmunization in men and the formation of both circulating and tissue antibodies against semen in women. In men, an immunoglobulin G in plasma has been shown to cause agglutination of spermatozoa. In women, a circulating immunoglobulin G has immobilized spermatozoa, while immunoglobulin A in cervical mucus has agglutinated spermatozoa. The antigen responsible for these immune responses has not yet been identified, though it may be one of several proteins present in seminal plasma. One possibility is lactoferrin which, in addition to being present in seminal plasma, also coats the spermatozoa. Clinically, an immunological examination is indicated in problems of infertility when results of routine tests are normal.

W. LESLIE G. QUINLIVAN, MD

REFERENCES

Isojima S, Tsuchiya K, Koyama K, et al: Further studies on sperm-immobilizing antibody found in sera of unexplained cases of sterility in women. Am J Obstet Gynecol 112:199-207, Jan 15, 1972

Quinlivan WLG, Sullivan H: The identity and origin of antigens in human semen. Fertil Steril 23:873-878, Dec 1972

Indications for Measuring Serum IgE Levels

MEASUREMENT OF SERUM IgE is now available both commercially for high levels and, for a wider range of concentrations, at several research and hospital immunology laboratories. While a grossly elevated serum IgE level is neither necessary nor sufficient for the manifestations of atopic disease, the *probability* of "allergic" symptoms being due to IgE-mediated hypersensitivity is highly correlated with the serum IgE level.

This is shown in the following analysis:

IgE units/ml*	*Theoretical Percent Atopics in an unselected population*
0-100	5
101-350	18
351-700	30
>700	100

*WHO IgE unit = approx. 2.4 ng IgE.

Atopic disease is rare at serum IgE levels of less than 100 units per ml and increasingly probable in persons with elevated IgE levels. Measurement of the serum IgE level is therefore a useful ancillary tool for the diagnosis of atopic eczema, urticaria, rhinitis, asthma and bronchopulmonary aspergillosis. An early rise of serum IgE level in babies is significant and is associated with atopic disease; however, special techniques are required for assay of the low levels observed. High levels are seen in many, but not all, cases of helminth infestation and in Wiskott-Aldrich syndrome. Extremely low levels (<15 units per ml) are seen in non-allergic babies, in many normal children and adults, and in certain immune deficiency diseases.

In other pathologic conditions IgE levels are elevated too inconsistently to be of diagnostic aid.

H. ALICE ORGEL, MD, PH D
ROBERT N. HAMBURGER, MD

REFERENCES

Spitz E, Gelfand EW, Sheffer AL, et al: Serum IgE in clinical immunology and allergy. J Allergy Clin Immunol 49:337, 1972

Miller JR, Lenair MA, Groshong T, et al: Development of serum IgE during the first year of life (abstr). Pediatr Res 7:368, 1973

Bazaral M, Orgel HA, Hamburger RN: IgE levels in normal infants and mothers and an inheritance hypothesis. J Immunol 107:794, 1971

Bazaral M, Orgel HA, Hamburger RN: The influence of serum IgE levels of selected recipients, including patients with allergy, helminthiasis and tuberculosis, on the apparent P-K titer of a reaginic serum. Clin Exper Immunol 14:117, 1973

Waldmann TA, Polmar SH, Balestra ST, et al: Serum IgE concentration of patients with acquired hypogammaglobulinemia, thymoma and hypogammaglobulinemia, myotonic dystrophy, intestinal lymphangiectasia and Wiskott-Aldrich syndrome. J Immunol 109:304, 1972

Henderson LL, Swedlund HA, Van Dellen RG, et al: Evaluation of IgE tests in an allergy practice. J Allergy Clin Immunol 48:361, 1971

The Role of Small Airways in Asthma

WHICH AIRWAYS in the lung are constricted in an asthmatic attack? Until recently it was assumed, based upon autopsy findings, that the major site of obstruction was in very small airways—primarily the bronchioles. Further, it was thought that these small airways constricted in an attack to an extent proportional to the severity of the episode.

Recent studies indicate that these concepts were, at least, incomplete. Bronchoconstriction has been found to be present in some areas of the lung but not in adjoining areas. This variation in regional function accounts for the common presence of hypoxemia in asthma. Another "nonclassical" finding is that large airways—bronchi—are often noted to be greatly reduced in caliber during bronchographic studies. Finally, increased airway resistance, always found during asthmatic attacks, has been shown to be primarily due to constriction of airways of 3 mm or more (at least of moderate size).

However, these findings do not mean that small airways are normal in asthmatic subjects.