Immunodeficiency Evaluation for Chronic Infections in Adults and Older Children Testing

Click here for topics associated with this algorithm

**Rule out:**
1. Physical/anatomic lesions, such as foreign body (bronchial), eustachian tube dysfunction, indwelling catheter, or other anatomic abnormalities
2. Cancer
3. Connective tissue diseases
4. Diabetes
5. Renal disease

Then perform the following testing:
1. Comprehensive Metabolic Panel (general health screening for immunodeficiency)
2. CBC with Platelet Count (general health screening for immunodeficiency)
3. Human Immunodeficiency Virus Types 1 and 2 (HIV-1, HIV-2) Antibody with Reflex to HIV-1 Antibody Confirmation by Western Blot
4. Protein Electrophoresis with Reflex to Immunofixation Electrophoresis Monoclonal Protein Detection, Quantitation and Characterization, IgA, IgG and IgM, Serum AND Kappa and Lambda Free Light Chains (Bence Jones Protein), Quantitative, Urine OR Monoclonal Protein Detection Quantitation & Characterization, SPEP, IFE, IgA, IgG, IgM, Serum
5. Sweat chloride (at accredited cystic fibrosis center)
6. If only recurrent sinopulmonary disease – pneumococcal antibody IgG titers pre and post vaccine (1 month)

**Immunoglobulin evaluation abnormal**

ORDER Cystic Fibrosis (CFTR) 165 Pathogenic Variants with Reflex to Sequencing

Mutation present

- Cystic fibrosis confirmed

ORDER B-Cell Memory and Naive Panel

- B cells present
- Absent IgA
- Low IgG 2, 4
- Pneumococcal vaccine response low

ORDER Immunoglobulin G Subclasses (1, 2, 3, 4)

- IgA absent
- Warn of possible reaction to IgA-containing blood products
- Symptomatic treatment

ORDER B-Cell Memory and Naive Panel

- Normal IgM cells, low IgG and IgA
- Hyper IgM syndromes likely

ORDER B-Cell Memory and Naive Panel

- Low IgG, IgM, IgA OR poor antibody response
- IgA low
- Monoclonal protein present
- Possible secondary hypogammaglobulinemias

ORDER B-Cell Memory and Naive Panel

- Drug induced
  1. Steroids
  2. Anti-rheumatic drugs
  3. Phenytoin
  4. Carbamazepine
- Secondary protein losses
  1. Chronic renal disease
  2. Nephrotic syndrome
  3. Protein-losing enteropathy
  4. Intestinal lymphangiectasia

ORDER B-Cell Memory and Naive Panel

- High IgM
  - low IgG, IgA

ORDER Immunology consult

- Consider monoclonal gammopathy of undetermined significance (MGUS), multiple myelomas, or Waldenstrom macroglobulinemia
- Consider true T-cell deficiency, HIV, CD4 deficiency, adenosine deaminase deficiency, chronic mucocutaneous candidiasis

ORDER Immunology consult

- Contact immunology consultant or medical director

ORDER Toll-Like Receptor Function

- Abnormal

ORDER Toll-Like Receptor Function

- Low IgG or IgM
- Abnormal DHR
- Chronic granulomatous disease
- Decreased CD11b/CD18
- Leukocyte adhesion deficiency, type 1
- Decreased CD15
- Leukocyte adhesion deficiency, type 2
- Increased IgE
- Possible hyper IgE syndrome (Job syndrome)

ORDER Immunoglobulin (IgA, IgG, IgM), Quantitative

- Abnormal complement activity

ORDER Complement Activity Enzyme Immunoassay (CH50) and Complement Activity, Alternate Pathway (AH50)

- Possible complement deficiency

ORDER Complement Activity Enzyme Immunoassay (CH50) and Complement Activity, Alternate Pathway (AH50)

- Abnormal

ORDER Complement Activity Enzyme Immunoassay (CH50) and Complement Activity, Alternate Pathway (AH50)

- All testing normal

ORDER Toll-Like Receptor Function

- Abnormal

ORDER Toll-Like Receptor Function

- Innate immune deficiency

ORDER Toll-Like Receptor Function

- Consider genetic testing

ORDER Toll-Like Receptor Function

- Cytokine Response

ORDER Toll-Like Receptor Function

- Drug induced
  1. Steroids
  2. Anti-rheumatic drugs
  3. Phenytoin
  4. Carbamazepine
- Secondary protein losses
  1. Chronic renal disease
  2. Nephrotic syndrome
  3. Protein-losing enteropathy
  4. Intestinal lymphangiectasia

ORDER Toll-Like Receptor Function

- Hypogammaglobulinemia
- Secondary to malignancy
  1. Chronic lymphocytic leukemia
  2. Lymphoma

ORDER Toll-Like Receptor Function

- Consider true T-cell deficiency, HIV, CD4 deficiency, adenosine deaminase deficiency, chronic mucocutaneous candidiasis

ORDER Toll-Like Receptor Function

- Contact immunology consultant or medical director

ORDER Toll-Like Receptor Function

- Low neutrophil count
- May need bone marrow exam

ORDER Toll-Like Receptor Function

- Neutrophil antibody positive
- Autimmune neutropenia

ORDER Toll-Like Receptor Function

- Absence of myeloperoxidase

ORDER Toll-Like Receptor Function

- Myeloperoxidase deficiency

© 2006 ARUP Laboratories. All Rights Reserved. www.arupconsult.com Last updated: March 2017