March 31, 2022

IMMUNOLOGY

MPO/PR3/GBM

Date effective: May 2, 2022

Clinical Practice Change:

The Shared Health Immunology Laboratory at St Boniface Hospital will be changing its testing methodology from the current BioPlex multiplex method to a combination of ELISA (MPO/PR3) and IFA (GBM) methods.

Background Information:

Associated Diseases	Fluorescence Pattern	Antigens
Granulomatosis with polyangiitis (Wegener's granulomatosis)	cANCA, rarely pANCA	PR3, rarely MPO
Microscopic polyangiitis	cANCA, pANCA	PR3, MPO
Eosinophilic granulomatosis with polyangiitis (Churg-Strauss-Syndrome)	pANCA	MPO
Polyarteritis nodosa	ANCA (low percentage)	Rarely PR3 or MPO
Rheumatoid arthritis	pANCA, atypical ANCA	Rarely MPO, Lactoferrin
Disseminated lupus erythematosus	pANCA	Rarely MPO, Lactoferrin
Ulcerative colitis (57%) Primary sclerosing cholangitis Crohn's disease (7%)	pANCA, atypical ANCA	Cathepsin G, Lactoferrin, Elastase, Lysozyme, other unknown antigens
Autoimmune hepatitis	pANCA, atypical ANCA	-

In autoimmune glomerulonephritis autoantibodies are directed against the basal membrane of the kidney glomeruli (GBM antigen). Anti-GBM glomerulonephritis accounts for 0.5 - 2% of all glomerulonephritides.

References/Resources:

Test: Laboratory Information Manual

Delphic Code: No Change

- ANCA is still orderable for diagnosis of Vasculitis and will continue to include reflex testing for MPO and/or PR3 as appropriate.
- Glomerular Basement Membrane Antibodies = GBM
- Myeloperoxidase Antibodies = MPO
- Proteinase 3 Antibodies = PR3

Sample: Serum 1.0 ml

Normal Range: GBM <1:10 Titre (Negative)
MPO/PR3 0-19 RU/ml

Availability: Weekdays (5-7day TAT)

Requisition: https://apps.sbgh.mb.ca/labmanual/test/loadDocumentPdf?documentId=2401

Patient Impact:

- As no international reference serum exists for antibodies against MPO or PR3, the calibration and reporting is in relative units (RU/ml). There is no linear correlation between the multiplex and ELISA methods. Any patients being followed for treatment response or to monitor disease activity should have baseline data reevaluated.

System Improvements:

- Improved correlation between IFA ANCA results and MPO/PR3.
  - 30 sera from patients with microscopic polyangitis (MPA), 327 sera from patients with other autoimmune diseases and 206 sera from healthy blood donors were investigated with the EUROIMMUN Anti-Myeloperoxidase ELISA (IgG) and the EUROIMMUN ANCA IIFT (IgG) was used as reference. The ELISA showed a sensitivity of 93.3% and a specificity of 99.8% with regard to the IIFT.[1]
  - Sera from 163 ANCA-associated vasculitides (AAV) patients (cANCA positive), a control panel of 585 patients with other diseases and 429 healthy blood donors were analyzed using the EUROIMMUN Anti-PR3-hn-hr ELISA (IgG). The sensitivity of the ELISA for ANCA positive AAV patients was 94%, with a specificity of 99%.[2]

References:

1. EUROIMMUN: Anti-Myeloperoxidase ELISA (IgG) Test Instruction, EA_1211G_A_UK_C03.doc
2. EUROIMMUN: Anti-PR3-hn-hr ELISA (IgG) Test Instruction, EA_1201-2G_A_UK_C06.
3. EUROIMMUN: EUROPLUS Nephrology Screen 1 EUROPattern Instructions for the indirect immunofluorescence test, FC_1250-1_A_UK_C01.doc

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