SydPath
ST VINCENT'S PATHOLOGY

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ANCA, MPO AND PR3 TESTING INFORMATION SHEET

INTRODUCTION

Anti-neutrophil cytoplasmic antibodies (ANCA) are a group of autoantibodies formed against antigens in the cytoplasm of neutrophils, most commonly proteinase 3 (PR3) and myeloperoxidase (MPO). Testing for ANCAs is useful in vasculitis diagnosis and classification. Serum ANCA is detected in two ways: a) an indirect immunofluorescence assay for staining patterns on human neutrophils, reported in titres and b) an immunoassay to quantify antibodies against PR3 and MPO, reported quantitatively in Units.

COMMON INDICATION FOR ANCA DETECTION

Diagnosis and classification of vasculitis and or glomerulonephritis.

ANCA IMMUNOFLUORESCNCE ASSAY

Three types of positive ANCA are reported: C-ANCA, P-ANCA and atypical ANCA, based on the staining pattern of the neutrophils in the immunofluorescence assay.

C-ANCA: A coarse, clumpy, granular cytoplasmic staining, which is usually associated with anti PR3 antibodies.

P-ANCA: A perinuclear staining pattern that is most associated with MPO antibodies. The presence of some anti-nuclear antibodies (homogeneous ANA) may interfere with and invalidate the reporting of p-ANCA. In this situation, an indeterminant result is reported. However, ANAs do not interfere with MPO or PR3 Ab testing.

Atypical ANCA: Patterns of neutrophil cytoplasmic and / or perinuclear fluorescence other than the two above, which probably occurs when neutrophil antigens other than MPO or PR3 are the antibody target.

PR3 AND MPO ANTIBODY TEST

These are detecting using specific immunoassays.

INTERPRETATION OF RESULTS

c-ANCA PATTERN AND/OR PR3 ANTIBODY is highly associated with ANCA-associated vasculitis:

• Granulomatosis with polyangiitis (GPA, previously known as Wegener's granulomatosis) and eosinophilic granulomatosis with polyangiitis (EGPA, previously known as Churg-Strauss syndrome). These are rare granulomatous and often necrotising vasculitidies affecting small-to-medium arteries and veins. Antibody levels correlate with disease activity and often disappear with disease remission.

• Microscopic PAN (MPA). A rare vasculitis affecting capillaries and often causing lung and renal disease. Antibody levels correlate with disease activity and often disappear with disease remission.
• Whilst originally believed to be highly specific for the above disorders PR3 Ab can also be seen in ulcerative colitis and idiopathic interstitial lung disease.

p-ANCA AND/OR MPO ANTIBODY

• Occurs in patients with a range of inflammatory conditions including, glomerulonephritis and other vasculitic syndromes as well as in inflammatory bowel disease.
• Found rarely, instead of c-ANCA/PR3 Ab, in ANCA-associated vasculitis as above.
• Is far less specific than c-ANCA and can be seen in healthy adults and in subjects with a range of non-vasculitic disorders. Clinical context is thus critical in interpretation of the results.

ATYPICAL ANCA PATTERNS

• Are associated with inflammatory bowel diseases, drug-induced vasculitis and other autoimmune disorders. These can be seen in healthy adults and in subjects with a range of disorders. Clinical context is thus critical in interpretation of the results.

TEST ORDERING

The immunofluorescence ANCA test is the primary screening assay and if this is positive or indeterminate, Sydpath will routinely undertake an immunoassay for PR3 and MPO. In a minority of patients, the immunofluorescence ANCA can be negative while PR3 and / or MPO testing is positive. Therefore, if the clinical suspicion is high, for maximum sensitivity, both ANCA and PR3/MPO assays should be ordered.