



ANCA-Associated Vasculitides

Overview

Vasculitides associated with antineutrophil cytoplasmic autoantibodies (ANCA) range from localized to multisystem disorders and if untreated, can lead to renal failure and/or respiratory hemorrhage.¹ Determination of ANCA pattern and specific target antigens helps to clarify the diagnosis, prognosis and treatment plans of patients with systemic vasculitides such as: Wegener's granulomatosis, necrotizing crescentic glomerulonephritis, Churg-Strauss syndrome and microscopic polyangiitis.²⁻⁸

Myeloperoxidase (MPO) antibodies are generally associated with the typical perinuclear P-ANCA pattern. At the time of diagnosis, patients with antibody specificity for MPO tend to have chronic lesions such as glomerular sclerosis and have slower deterioration of renal function.² In general, patients with MPO are more likely to have renal-limited small

vessel vasculitis. Proteinase 3 (PR-3) antibodies are associated with the cytoplasmic C-ANCA pattern. Patients with antibody specificity for PR-3 tend to have more rapidly progressing disease with extra-renal organ involvement especially respiratory disease.²

Antibodies to bactericidal/permeability-increasing protein (BPI) are found in some individuals with atypical P-ANCA-associated inflammatory bowel disease.⁹ ANCA are more frequently (50-90%) found in ulcerative colitis than in Crohn's disease (15-30%).^{6,10,11}

Recent studies have identified ANCA in both juvenile chronic arthritis and early rheumatoid arthritis. MPO/P-ANCA may prove to be a marker for disease severity.^{12,13}

Clinical Utility

Classification of ANCA and specificity for target antigens may help:

- ?? distinguish among the various forms of renal-limited and multisystem vasculitides
- ?? predict which patients are more likely to have an early, aggressive disease course
- ?? determine if patients are likely to benefit from IVIG or immunosuppressive agents^{4,5,14}
- ?? monitor disease activity and therapeutic efficacy to identify patients at risk of relapse⁷

Ordering Information & Specimen Requirements

Test Code	Test Name	Specimen Requirements
1868	PAN-ANCA™ PLUS ANCA pattern/total autoantibodies;* ANA/pattern; MPO, PR-3, and BPI IgG autoantibodies	3 mL Serum; Ambient, Refrigerated or Frozen.
1866	PAN-ANCA™ Evaluation ANCA pattern/total autoantibodies;* ANA/pattern; MPO, PR-3	3 mL Serum; Ambient, Refrigerated or Frozen.

Methodology

- Antineutrophil Cytoplasmic Autoantibodies (ANCA), Indirect Fluorescent Antibody (IFA) and Image Analysis (ANCA screened by FC; confirmation and pattern determined by IFA)
- Myeloperoxidase (MPO) Autoantibodies, Enzyme Immunoassay (EIA)
- Proteinase 3 (PR-3) Autoantibodies, EIA
- Antinuclear Antibodies (ANA), IFA, Image Analysis (ANA can interfere with interpretation of a perinuclear [P-ANCA] pattern.)
- Bactericidal Permeability Increasing (BPI) Protein Autoantibodies, EIA

Related Tests

- 1000 ANAlyzer[®]
- 1386 Myeloperoxidase Autoantibodies
- 1396 Proteinase-3 Autoantibodies
- 1862 Antineutrophil Cytoplasmic Autoantibodies
- 4072 Bactericidal Permeability-Increasing (BPI) Protein Autoantibodies (IgG, IgM & IgA) Evaluation

References

1. Savige J, Davies D, Falk RJ, Jennette JC, Wiik A. Antineutrophil cytoplasmic antibodies and associated disease: a review of the clinical and laboratory features. *Kidney Int* 2000;57:846-62.
2. Franssen CFM, Stegeman CA, Kallenberg CGM, et al. Antiproteinase 3- and antimyeloperoxidase-associated vasculitis. *Kidney Int* 2000;57:2195-206.
3. Lim LCL, Taylor JG, Schmitz JL, et al. Diagnostic usefulness of antineutrophil cytoplasmic autoantibody serology. *Am J Clin Pathol* 1999;111:363-9.
4. Gross WL, Csernok E, Szymkowiak CH. Antineutrophil cytoplasmic autoantibodies with specificity for proteinase 3. In: Peter JB, Shoenfeld Y, eds. *Autoantibodies*. Amsterdam:Elsevier Science BV, 1996:61-7.
5. Kallenberg CGM. Antineutrophil cytoplasmic autoantibodies with specificity for myeloperoxidase. In: Peter JB, Shoenfeld Y, eds. *Autoantibodies*. Amsterdam:Elsevier Science BV, 1996:53-60.
6. Murphy LK, Targan SR. Antineutrophil cytoplasmic antibodies in inflammatory bowel diseases. In: Peter JB, Shoenfeld Y, eds. *Autoantibodies*. Amsterdam:Elsevier Science BV, 1996:47-52.
7. Ara J, Mirapeix E, Rodriguez R, Saurina A, Darnell A. Relationship between ANCA and disease activity in small vessel vasculitis patients with anti-MPO ANCA. *Nephrol Dial Transplant* 1999;14:1667-72.
8. Roozendaal C, Kallenberg CGM. Anti-neutrophil cytoplasm autoantibodies (ANCA) in autoimmune liver diseases. *Hepato-Gastroenterol* 1999;46:3034-40.
9. Zhao M-H, Lockwood CM. Antineutrophil cytoplasmic autoantibodies with specificity other than PR-3 and MPO (X-ANCA). In: Peter JB, Shoenfeld Y, eds. *Autoantibodies*. Amsterdam:Elsevier Science BV, 1996:68-73.
10. Hoffenberg EJ, Fidanza S, Sayaia A. Serologic testing for inflammatory bowel disease. *J Pediatr* 1999;134:441-52.
11. Vasiliaskas EA, Plevy SE, Landers CJ, et al. Perinuclear antineutrophil cytoplasmic antibodies in patients with Crohn's disease define a clinical subgroup. *Gastroenterology* 1996;110:1810-9.
12. Bakaloglu A, Ozen S, Saatci U, et al. Antineutrophil cytoplasmic antibodies in juvenile chronic arthritis. *Clin Rheumatol* 1999;18:304-7.
13. Mustila A, Paemela L, Leirisalo-Repo M, Huhtala H, Miettinen A. Antineutrophil cytoplasmic antibodies in patients with early rheumatoid arthritis: an early marker of progressive erosive disease. *Arthritis Rheum* 2000;43:1371-7.
14. Jayne DRW, Chapel H, Adu D, et al. Intravenous immunoglobulin for ANCA-associated systemic vasculitis with persistent disease activity. *Q J Med* 2000;93:433-9.