Patient ID : p\_id Name : p\_name Age/Sex : age\_sex
Ref. by : doctor\_ref Lab no : Date : test\_date
ANA (Anti Nuclear Antibody), IFA\* Serum
Anti-nuclear antibody (ANA) test report by IIFT
Pattern in HEp 20-10 cells Description Fluorescence intensity
Nuclear pattern PCNA like Moderate
Cytoplasmic pattern Speckled Weak
Mitotic pattern Negative Not applicable
Note: Sample dilution for test: 1:100.
Subjective interpretation of intensity of fluorescence (at sample dilution of 1:100)
Intensity of fluorescence Interpretation
Weak Positive in a dilution of 1:100
Moderate Positive in a dilution of 1:320
Strong Positive in a dilution of 1:1000 or higher
Disclaimer: ANA patterns and intensity of fluorescence by IIFT is a qualitative and subjective assessment that may vary between laboratory testing sites and the methodology used. Assay results should be interpreted only in the context of additional laboratory findings and the overall clinical status of the patient.
Specific autoantibody (Aab) titer estimation may be asked for separately
Method: Indirect immunofluorescence test (IIFT); HEp 20-10 cells and primate liver cell Biochip;
Test description: Antinuclear Antibodies are a unique group of auto antibodies that have ability to attack structures in the nucleus of cells including DNA, RNA and other nuclear proteins. Anti-nuclear antibody (ANA) testing is a cornerstone of autoimmune diagnostics. ANA are detected by indirect immunofluorescence test (IIFT). IIFT on human epithelial (HEp-20-10) cells is the gold standard for detection of ANA. Different types of ANA give rise to characteristic staining patterns on the HEp-20-10 cells, depending on the cellular location and properties of the antigenic target. Analysis of the fluorescence pattern enables classification of the antibody or antibodies present in the patient sample.
Nuclear pattern (True ANA) are defined as any staining of the HEp-2/ HEp 20-10 interphase nuclei. The nomenclature for nuclear patterns is primarily based on the reactivity observed in the nucleoplasm (e.g. homogeneous or speckled) and the nuclear subcomponents that are recognised (e.g. centromere or nucleolar).
Cytoplasmic pattern is defined as any staining of the HEp-2/ HEp 20-10 cytoplasm. The nomenclature is primarily based on the reactivity observed in the cytoplasm (e.g. fibrillar or speckled) and the cytoplasmic structure that is recognised (e.g. rods and rings).
Mitotic patterns are defined as patterns that address cell domains strongly related to mitosis.
Confirmation of IIFT results Positive results in the ANA IIFT screening assay should always be confirmed in additional specific testing like Monospecific ELISA or ANA Immunoblot assay.
Immunofluorescence pattern and their clinical associations:
Table 1. Target antigens and associated diseases for nuclear patterns
Pattern (ICAP) Code Antigen association Clinical relevance
Homogenous AC 1 dsDNA, histones, nucleosome SLE, drug induced lupus, juvenile idiopathic arthritis
Speckled AC 2,4,5 hnRNP, U1RNP, Sm,SS-A/Ro (Ro60) , SS-B/La, RNA polymerase III, Mi-2 , Ku MCTD, SLE, SjS, DM, SSc/PM overlap
Dense Fine speckled (DFS) AC 2 DFS 70/ LEDGF Rare in SLE, SjS, SSc
Fine speckled AC 4 SS-A/Ro (Ro-60), SS-B /La, Mi-2, TIF1y, TIF18, Ku, RNA helicase A, replication protein A SJS, SLE, DM, SSc/Pm overlap
Large/Coarse speckled AC 5 hnRNP, U1RNP, Sm, RNA polymerase III MCTD, SLE, SSc
Centromere AC 3 CENP-A/B(C) Limited cutaneous SSc, PBC
Discrete Nuclear dots AC 6,7
Multiple Nuclear dots AC 6 Sp100, PML proteins, MJ/NXP-2 PBC, SARD, PM/DM
Few Nuclear dots AC 7 p 80 - coilin, SMN SJS, SLE, SSc, PM, asymptomatic individuals
Nucleolar AC 8, 9, 10
Nucleolar homogeneous AC 8 PM/Scl-75, PM/Scl-100, Th/to B23/nucleophosmin, nucleolin, No55/SC65 SSc, SSc/PM overlap
Nucleolar clumpy AC 9 U3-snoRNP/fibrillarin SSc
Nucleolar punctate AC 10 RNA polymerase I, hUBF/NOR - 90 SjS, SSc
Nuclear envelope AC 11, 12
Smooth nuclear envelope AC 11 Laminis A, B, C or lamin associated proteins SLE, Sjs, seronegative arthritis
Punctate nuclear envelope AC 12 Nuclear pore complex proteins (i.e. gp 210) PBC
Pleomorphic AC 13, 14
PCNA -like AC 13 PCNA SLE, other conditions
CENP -like AC 14 CENP-F Cancer, other conditions
Table 2. Target antigens and associated diseases for cytoplasmic patterns
Pattern (ICAP) Code Antigen association Clinical relevance
Fibrillar AC- 15, 16, 17
Linear/ actin Ac- 15 Actin, non-muscle myosin MCTD MCTD, chronic active hepatitis liver cirrhosis myasthenia gravis, Crohn's disease, PBC long term hemodialysis, rare in SARD other than MCTD.
Filamentous / microtubules Ac- 16 Vimentin, cytokeratins Infectious or inflammatory conditions, long term haemodialysis alcoholic liver disease, SARD, psoriasis healthy controls
Segmental Ac- 17 Alpha actinin, vinculin, tropomyosin Myasthenia gravis, Crohn's disease, ulcerative colitis.
Speckled AC- 18, 19, 20
Discrete dots Ac- 18 SGW 182, Su/Ago2. Ge-1 PBC, SARD, neurological and autoimmune conditions
Dense fine speckled Ac- 19 PL - 7, PL-12, ribosomal P Proteins anti synthetase syndrome', PM/DM, SLE, juvenile SLE neuropsychiatric SLE
Fine speckled Ac- 20 Jo- 1/histidyl- tRNA synthetase Anti-synthetase syndrome, PM/DM, limited SSc, idiopathic pleural effusion
Reticular /AMA AC - 21 PDC-E2 /M2, BCCADC-E2 OGDC -E2, E1a subunit of PDC E3BP/protein X Common in PBC, SSc, rare in other SARD
Polar / Golgi - like AC-22 Giantin/ macrogolgin, golgin - 95 / GM 130, golgin -160, golgin - 97, golgin 245 Rare in SjS, SLE, RA, MCTD, GPA, idiopathic cerebellar ataxia, paraneoplastic cerebellar degeneration viral infections
Rings and Rods AC-23 IMPDH2, others HCV infection, post IFN /ribavirin therapy, rare in SLE, Hashimoto`s and healthy controls
Table 3. Target antigens and associated diseases for mitotic patterns
Pattern (ICAP) Code Antigen association Clinical relevance
Centrosome AC-24 Pericentrin, ninein, Cep 250, Cep 110, enolase Rare in SSc, Raynaud's phenomenon, infections (viral and mycoplasma)
Spindle fibers AC-25 HsEg5 Rare in Sjs SLE, other SARD
NUMA - like AC-26 Centrophilin SjS, SLE, other
Intercellular bridge AC-27 Aurora kinase B, CENP -E
MSA - 2, KIF - 14, MKLP - 1 Rare in SSc Raynaud's phenomenon, malignancy
Mitotic chromosome coat AC-28 Modified histone H3, MCA -1 Rare in discoid lupus erythematosus chronic lymphocytic leukemia, SjS, and polymyalgia rheumatica
Abbreviations:
SLE: systemic lupus erythematosus, DM: dermatomyositis; dsDNA: double-stranded DNA, IM: inflammatory myopathies, JIA: juvenile idiopathic arthritis, MCTD: mixed connective tissue disease, PM/Scl: polymyositis/scleroderma, PBC: primary biliary cirrhosis, RA: rheumatoid arthritis, SRP: signal recognition particle, PSS: Progressive systemic sclerosis, CAH: chronic autoimmune hepatitis, CENP:centromere protein, NuMA: nuclear mitotic apparatus, SjS: sjogren's syndrome
References:
1.International recommendations for the assessment of autoantibodies to cellular antigens referred to as anti-nuclear antibodies; Agmon-Levin N, et al. Ann Rheum Dis 2014;73:17-23.
2.International consensus on ANA patterns; www.ANApatterns.org
3.Gosnik J, EUROIMMUNE AG, Luebeck Germany. The Quest for Standardised Laboratory Reporting. Diagnostics/ Anti-nuclear Antibody Patterns.
4.K.L. Chan, J. Damoiseaux, O.G. Carballo, K. Conrad, W. de Melo Cruvinel, P.L.C. Francescantonio, M.J. Fritzler, I. Garcia-De La Torre, M. Herold, T. Mimori, M. Satoh, C.A. von Mühlen, and L.E.C. Andrade. Report of the First International Consensus on Standardized Nomenclature of Antinuclear Antibody HEp-2 Cell Patterns (ICAP) 2014-2015 (Front. Immunol. 2015, Aug 20;6:412).
NOTE : This test was processed at third party lab.
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