Enhanced Detection of Autoantibodies in Idiopathic Inflammatory Myopathies: A Comparison of Microblot Array and Standard Diagnostic Methods

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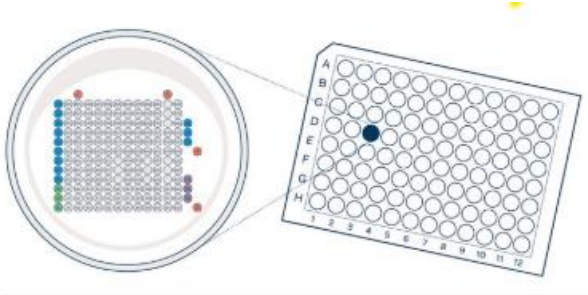
Main goals:

- To evaluate MBA's diagnostic performance in ANA testing for IIM.
- To analyze its correlation with traditional ANA methods and clinical presentation.
- To validate concordance with IFA and BLOT in detecting myositis-related autoantibodies.
- To examine the distribution of specific autoantibodies across IIM subtypes.

Introduction:

- Idiopathic inflammatory myopathy (IIM) encompasses dermatomyositis (DM), polymyositis (PM), overlap myositis (OM), anti-synthetase syndrome (ASS), sporadic inclusion body myositis (IBM), and immune-mediated necrotizing myopathy (IMNM).
- These autoimmune conditions cause muscle inflammation, organ dysfunction, and increased morbidity and mortality.
- Autoantibodies are crucial for diagnosis and pathogenesis. Traditional ANA tests like immunofluorescence (IFA) and BLOT have limitations in antigen distribution, sample volume, and accuracy.
- The Microblot-Array (MBA) ANA enables simultaneous analysis of 44 markers, offering a comprehensive view of autoimmune diseases (AIDs).



Methods:

- The study evaluated the diagnostic accuracy of the MBA in ANA diagnostics. Antibody distribution was assessed in sera from 423 patients (319 female, 104 male) with idiopathic inflammatory myopathies, stored at the Institute of Rheumatology.
- All sampes were diagnostically characterized by laboratory routine methods (screening by indirect immunofluorescence IIF – ANA, Hep 2, IMMUNOCONCEPT, San Diego and by Myositis Blot, Euroimmun.

Results 1:

- The study demonstrated a strong concordance between myositis-specific (MSA) and myositis-associated (MAA) antibodies detected by MBA and traditional diagnostic methods.

n = 408		positive	negative
MYOSITIS	MBA (MSA)	213	195
	IIF	217	191
	BLOT (MSA)	233	175

Results 2:

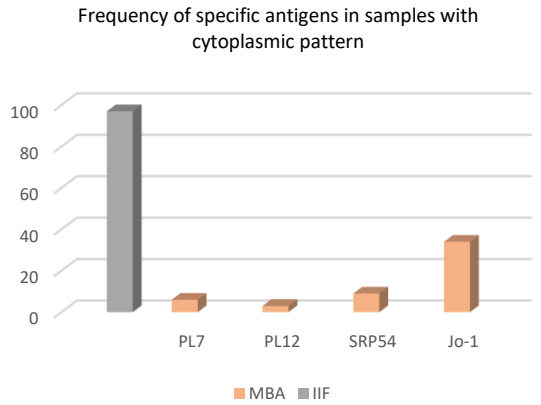
- In ASS, antibodies were found in 26 patients, correlating well with IIF.

Results 3:

- MBA detected anti-HMGCR in 100% of 53 IMNM patients, fully confirmed by ELISA (Werfen), demonstrating high sensitivity.

Results 4:

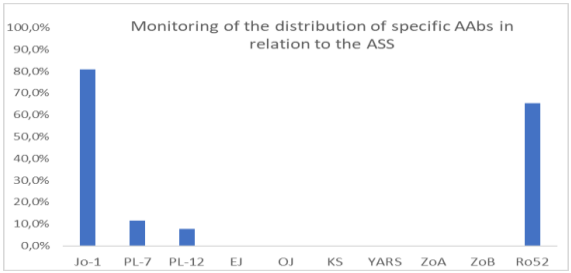
- Correlation with the type of ANA patterns
  - AC19: reactivity of PL7 6%, PL12 3%, SRP54 9,3%
  - AC20: reactivity of Jo-1 35%



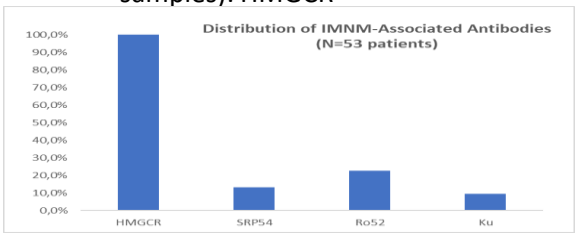
  - AC4: reactivity of Mi-2 16,6%, TIF1-gamma 4,6%, NXP2 3,4%

Results 5:

- Monitoring of the distribution of specific AAbs in relation to the types of SARD disease
  - The most frequently reacting antigens in ASS patients (>20% samples): Jo-1, Ro, PL7, PL12



  - The most frequently reacting antigens in IMNM patients (> 20% samples): HMGCR



Conclusions:

- MBA aligns well with BLOT and IFA, significantly enhancing ANA diagnostics.
- Its ability to detect multiple antibodies in a single test improves diagnostic accuracy and efficiency, leading to faster, more personalized treatment options and better long-term patient outcomes.

Acknowledgements: BBMRI-CZ LM2018125

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