Inflammatory Myopathy–Associated ILD: Unraveling Mechanisms, Markers, and Management

Masataka Kuwana

Organization Nippon Medical School, Department of Allergy and Rheumatology
Current Position Professor

Educational background

1988-1992 Ph.D., Keio University Graduate School of Medicine, Tokyo, Japan
1983-1988 M.D., Keio University School of Medicine, Tokyo, Japan

Professional experience

2025-Present Vice President, Nippon Medical School, Tokyo, Japan
2020-Present Director, Scleroderma Myositis Center of Excellence at Nippon Medical School Hospital, Tokyo, Japan
2014-Present Professor and Chairman, Department of Allergy and Rheumatology, Nippon Medical School Graduate School of Medicine, Tokyo, Japan
2006-2014 Associate Professor, Division of Rheumatology, Department of Internal Medicine, Keio University School of Medicine, Tokyo, Japan
1993-1996 Postdoctoral Research Fellow, Division of Rheumatology and Clinical Immunology, Department of Medicine, University of Pittsburgh School of Medicine, Pittsburgh, PA

Interstitial lung disease (ILD) is a major cause of morbidity and mortality in idiopathic inflammatory myopathies (IIMs), including dermatomyositis (DM), polymyositis/immune-mediated necrotizing myopathy, anti-synthetase syndrome (ASyS), and overlap myositis. ILD occurs most frequently in DM and ASyS, but its clinical course is highly variable, ranging from rapidly progressive disease with high mortality to chronic, non-progressive forms. Because prognosis and treatment response are often unpredictable, substantial efforts have focused on identifying clinical features, morphologic patterns, and biomarkers that can predict outcomes. Myositis-specific autoantibodies, particularly anti-synthetase and anti-MDA5, are especially informative for stratifying patients by disease behavior, therapeutic response, and prognosis. Imaging findings most commonly reveal nonspecific interstitial pneumonia, organizing pneumonia, or a combination of these patterns. Recent studies have highlighted the pivotal role of interferons (IFNs) in pathogenesis: IFN-α/β in DM-specific cutaneous manifestations, IFN-γ in anti-synthetase-associated muscle and lung inflammation, and IFN-λ3 in anti-MDA5-associated rapidly progressive ILD. Immunosuppression remains the cornerstone of therapy, with aggressive combination regimens required for rapidly progressive disease; antifibrotic agents may be considered in progressive pulmonary fibrosis. Although many patients respond to treatment, short-term mortality remains high in anti-MDA5-associated rapidly progressive ILD. The classification and management of IIM-associated ILD remain challenging, underscoring the need for prospective studies to establish optimal treatment regimens.