

# The Link between Autoimmune Diseases and Lung Health

Mandela Sedro\*

Department of Life Sciences, International Medical University, Kuala Lumpur, Malaysia

## Introduction

Autoimmune diseases represent a diverse group of disorders characterized by the immune system's misguided attack on the body's own tissues. While these conditions primarily affect specific organs or systems, emerging evidence suggests a significant interplay between autoimmune diseases and lung health. This article explores the intricate relationship between autoimmune disorders and lung diseases, highlighting common autoimmune conditions affecting the lungs, shared underlying mechanisms and implications for diagnosis, treatment and management. Understanding this link is critical for clinicians and researchers alike, as it provides insights into the complex interactions between immunity and respiratory function, paving the way for more effective strategies to address both autoimmune and pulmonary manifestations. Autoimmune diseases constitute a broad spectrum of disorders in which the immune system, designed to protect the body from foreign invaders, mistakenly attacks its own tissues. While these conditions primarily target specific organs or systems, growing evidence suggests a complex interplay between autoimmune disorders and lung health. Understanding the link between autoimmune diseases and lung health is essential for clinicians and researchers alike, as it can inform diagnostic approaches, treatment strategies and patient management. Several autoimmune diseases can affect the lungs, either through direct involvement or as secondary complications [1].

The underlying mechanisms linking autoimmune diseases and lung disorders are multifactorial and complex. Deregulated immune responses, characterized by aberrant activation of immune cells and cytokine production, play a central role in both autoimmune pathogenesis and lung inflammation. In addition, autoantibodies, such as rheumatoid factor and anti-nuclear antibodies, may contribute to tissue damage and inflammation in the lungs. Furthermore, genetic susceptibility, environmental factors and symbiosis of the lung micro biota have been implicated in the development and progression of autoimmune-mediated lung diseases. Shared pathways of inflammation, fibrosis and vascular dysfunction further underscore the interconnectedness between autoimmune disorders and pulmonary manifestations. Diagnosing autoimmune-mediated lung diseases can be challenging due to their heterogeneous clinical presentations and overlapping features with other lung conditions. Comprehensive evaluation, including detailed clinical history, physical examination, serological testing and imaging studies, is essential for accurate diagnosis and differential diagnosis. Pulmonary function tests, High-Resolution Computed Tomography (HRCT) and bronchoscopy with bronchoalveolar lavage may provide valuable insights into lung function and pathology. Collaboration between pulmonologists, rheumatologists and other specialists is often necessary to ensure timely diagnosis and appropriate management [2].

The management of autoimmune-mediated lung diseases involves a multidisciplinary approach aimed at suppressing inflammation, preserving lung function and improving quality of life. Immunosuppressive agents, such

\*Address for Correspondence: Mandela Sedro, Department of Life Sciences, International Medical University, Kuala Lumpur, Malaysia, E-mail: msedro@gmail.com

**Copyright:** © 2024 Sedro M. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

**Received:** 02 May, 2024, Manuscript No. LDT-24-139411; **Editor Assigned:** 04 May, 2024, PreQC No. P-139411; **Reviewed:** 18 May, 2024, QC No. Q-139411; **Revised:** 23 May, 2024, Manuscript No. R-139411; **Published:** 30 May, 2024, DOI: 10.37421/2472-1018.2024.10.247

as corticosteroids, Disease-Modifying Anti-Rheumatic Drugs (DMARDs) and biologic agents are commonly used to control autoimmune activity and reduce lung inflammation. Pulmonary rehabilitation, oxygen therapy and supportive care measures play a crucial role in optimizing respiratory function and symptom management. In severe cases, lung transplantation may be considered for patients with end-stage lung disease refractory to medical therapy. In recent years, advancements in immunology and targeted therapies have expanded the treatment options for autoimmune-mediated lung diseases. Biologic agents targeting specific immune pathways have shown promise in managing autoimmune disorders and associated lung manifestations. For example, monoclonal antibodies directed against Tumour Necrosis Factor-Alpha (TNF- $\alpha$ ), interleukin-6 and B lymphocytes have demonstrated efficacy in reducing inflammation and improving clinical outcomes in patients with rheumatoid arthritis, systemic lupus erythematosus and other autoimmune conditions. Furthermore, the development of small molecule inhibitors targeting key signalling pathways implicated in autoimmunity offers new avenues for therapeutic intervention. Janus kinase inhibitors, for instance, block cytokine signalling pathways involved in immune activation and inflammation, showing potential for treating autoimmune diseases with lung involvement, such as rheumatoid arthritis-associated ILD and systemic sclerosis-associated interstitial lung disease [3].

## Description

In addition to conventional immunosuppressive agents and biologic therapies, emerging modalities such as cell-based therapies and immune checkpoint inhibitors hold promise for modulating immune responses and restoring immune tolerance in autoimmune disorders. Mesenchyme stem cell therapy, for example, has been investigated as a potential treatment for autoimmune-mediated lung diseases due to its immunomodulatory and regenerative properties. Similarly, immune checkpoint inhibitors, originally developed for cancer immunotherapy, are being explored for their potential role in autoimmune diseases by targeting regulatory checkpoints that control immune activation and tolerance. Precision medicine, which tailors treatments to individual patient characteristics, holds great promise for improving outcomes in autoimmune-mediated lung diseases. Advances in genomic sequencing and molecular profiling enable the identification of genetic variants, biomarkers and immune signatures associated with disease susceptibility, progression and response to therapy. Integrating genomic data with clinical information allows clinicians to stratify patients based on their molecular profiles and select targeted therapies with the greatest likelihood of efficacy and minimal toxicity [4].

Moreover, the concept of precision immunology aims to refine our understanding of immune deregulation in autoimmune diseases and develop personalized immunomodulatory strategies tailored to the specific immune abnormalities present in individual patients. By elucidating the molecular mechanisms driving autoimmunity and lung inflammation, researchers can identify novel therapeutic targets and design precision therapies that address the underlying pathophysiology of autoimmune-mediated lung diseases. In addition to pharmacological interventions, patient-centred care and support play a crucial role in managing autoimmune diseases affecting the lungs. Comprehensive care teams comprising pulmonologists, rheumatologists, nurses, respiratory therapists and other allied health professionals collaborate to address the diverse needs of patients, providing holistic care that encompasses physical, psychological and social aspects. Patient education and self-management strategies empower individuals with autoimmune diseases to actively participate in their care, adhere to treatment regimens

and make informed decisions about their health. Supportive services, such as pulmonary rehabilitation, counselling and peer support groups, offer valuable resources for managing symptoms, coping with the emotional impact of chronic illness and fostering resilience [5].

---

## Conclusion

The intricate relationship between autoimmune diseases and lung health underscores the importance of a comprehensive approach to patient care. Recognizing the pulmonary manifestations of autoimmune disorders, understanding the underlying mechanisms and implementing tailored diagnostic and therapeutic strategies are essential for optimizing outcomes and improving the quality of life for affected individuals. As our understanding of the link between autoimmunity and lung diseases continues to evolve, on-going research efforts hold promise for identifying novel therapeutic targets and advancing personalized approaches to patient management. By addressing both autoimmune and pulmonary manifestations in a holistic manner, clinicians can better meet the complex needs of patients living with autoimmune diseases affecting the lungs.

---

## Acknowledgement

None.

---

## Conflict of Interest

There are no conflicts of interest by author.

---

## References

1. Singh, Navneet, Sarah Temin, Sherman Baker Jr and Elizabeth Blanchard, et al. "Therapy for stage IV non-small-cell lung cancer without driver alterations: ASCO living guideline." *Clin Oncol* 40 (2022): 3323-3343.
2. Spigel, David R., Corinne Faivre-Finn, Jhanelle E. Gray and David Vicente, et al. "Five-year survival outcomes from the PACIFIC trial: Durvalumab after chemoradiotherapy in stage III non-small-cell lung cancer." *Clin Oncol* 40 (2022): 1301.
3. O'Brien, Mary, Luis Paz-Ares, Sandrine Marreaud and Urania Dafni, et al. "Pembrolizumab versus placebo as adjuvant therapy for completely resected stage IB-IIIa non-small-cell lung cancer (PEARLS/KEYNOTE-091): An interim analysis of a randomised, triple-blind, phase 3 trial." *Lancet Oncol* 23 (2022): 1274-1286.
4. Forde, Patrick M., Jamie E. Chaft, Kellie N. Smith and Valsamo Anagnostou, et al. "Neoadjuvant PD-1 blockade in resectable lung cancer." *N Engl J Med* 378 (2018): 1976-1986.
5. Forde, Patrick M., Jonathan Spicer, Shun Lu and Mariano Provencio, et al. "Neoadjuvant nivolumab plus chemotherapy in resectable lung cancer." *N Engl J Med* 386 (2022): 1973-1985.

**How to cite this article:** Sedro, Mandela. "The Link between Autoimmune Diseases and Lung Health." *J Lung Dis Treat* 10 (2024): 247.