



## Various Complex Techniques of Systemic Sclerosis

Levy Wakar \*

Department of Dermatology, Liverpool University Dental Hospital, Liverpool, United Kingdom

### DESCRIPTION

Scleroderma, also known as systemic sclerosis, is a complex and potentially debilitating autoimmune disease that affects the connective tissues of the body. It is characterized by the excessive production and accumulation of collagen, leading to the hardening and thickening of the skin and other internal organs. The exact cause of scleroderma remains elusive, but researchers have made significant strides in understanding its underlying mechanisms. This disorder involves a combination of genetic predisposition, immune system dysfunction, vascular abnormalities, and environmental triggers, all of which contribute to its development and progression.

While scleroderma is not directly inherited, there is evidence to suggest a genetic predisposition to the disease. Certain genes have been identified to increase the risk of developing scleroderma, Family history plays a significant role, and individuals with close relatives affected by scleroderma may have an increased susceptibility.

The immune system plays a central role in the development of scleroderma. In a healthy individual, the immune system protects the body from foreign invaders and harmful substances. In the case of scleroderma, the immune system becomes dysfunction, leading to an abnormal activation of immune cells and an increased production of autoantibodies.

One hallmark of scleroderma is the presence of specific autoantibodies in the blood. These autoantibodies target various components of the body's own cells and tissues, including the vascular endothelial cells and fibroblasts, which are responsible for collagen production. The interaction between these autoantibodies and their respective targets triggers a cascade of inflammatory responses and promotes the deposition of excessive collagen.

Scleroderma also involves abnormalities in the blood vessels, which contribute to the disease's vascular manifestations. Impaired blood flow and damage to the small blood vessels can lead to Raynaud's phenomenon, where the fingers and toes

experience extreme sensitivity to temperature changes, turning white, blue, and red in response.

The hallmark feature of scleroderma is the excessive production and deposition of collagen in various tissues. Normally, collagen is essential for providing structure and support to tissues, but in scleroderma, it becomes overproduced and deposited in an uncontrolled manner. This leads to fibrosis, or the formation of scar tissue, which can affect the skin, lungs, heart, kidneys, and other organs.

Environmental factors are thought to play a role in triggering scleroderma in individuals with a genetic predisposition. These triggers may include exposure to certain chemicals, viral infections, and other external factors that could activate the immune system and lead to the production of autoantibodies.

Endothelial cells line the interior of blood vessels and play a vital role in maintaining vascular health. In scleroderma, dysfunction of these cells occurs, leading to increased permeability of blood vessels and abnormal production of molecules that further promote inflammation and fibrosis.

Transforming growth factor-beta (TGF- $\beta$ ) is a signaling pathway that regulates collagen production and tissue repair. In scleroderma, this pathway becomes deregulated, leading to an up regulation of collagen production and fibrosis.

### CONCLUSION

In summary, the mechanism of scleroderma involves a complex interplay of genetic predisposition, immune system dysfunction, vascular abnormalities, and environmental triggers. This autoimmune disease leads to excessive collagen production and fibrosis, affecting various organs and tissues throughout the body. As researchers continue to explore the underlying mechanisms of scleroderma, these insights provide hope for the development of targeted therapies to improve the quality of life for those affected by this challenging condition. Early diagnosis, multidisciplinary care, and ongoing research are essential to better understand and manage this enigmatic disease.

**Correspondence to:** Levy Wakar, Department of Dermatology, Liverpool University Dental Hospital, Liverpool, United Kingdom, E-mail: Wakarle01@gmail.com

**Received:** 19-Jul-2023, Manuscript No. JOD-23-22377; **Editor assigned:** 21-Jul-2023, Pre QC No. JOD-23-22377 (PQ); **Reviewed:** 07-Aug-2023, QC No JOD-23-22377; **Revised:** 14-Aug-2023, Manuscript No. JOD-23-22377 (R); **Published:** 21-Aug-2023, DOI: 10.35248/2684-1436.23.8.210

**Citation:** Wakar L (2023) Various Complex Techniques of Systemic Sclerosis. J Dermatit. 8:210.

**Copyright:** © 2023 Wakar L. 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.