



Recent research has highlighted the crucial connection between genetics and the immune system in the context of psoriatic disease. This relationship plays a significant role in how the body responds to inflammation, particularly in conditions like psoriasis and psoriatic arthritis. Here, we explore the evidence suggesting the immune system's involvement in these diseases and the potential for future treatments.



A double-edged sword

The immune system is our body's defence mechanism, primarily composed of white blood cells, including T lymphocytes. These cells patrol the bloodstream and tissues, identifying and eliminating foreign invaders such as viruses and cancerous cells. Each of our cells carries specific identity markers, enabling the immune system to recognise them. However, in some cases, the immune system can misfire, attacking healthy tissues and leading to autoimmune disorders.



In psoriatic disease, research indicates that inflammation in the skin and joints is significantly influenced by T lymphocytes. Under normal conditions, these immune cells perform the vital task of monitoring for infections. Yet, in individuals with psoriasis, T lymphocytes are found in increased numbers within the affected skin and joints. Their heightened activity contributes to the thickening of the epidermis typical of psoriasis and the joint damage seen in psoriatic arthritis.

T lymphocytes

When T lymphocytes encounter a pathogen, they act swiftly to destroy the infected cells and signal other immune cells to join the fight. However, the presence of these cells in excess within psoriatic lesions indicates a malfunction in their regulatory mechanisms. This overactivity leads to chronic inflammation and the characteristic symptoms of psoriasis.

To combat this condition, healthcare providers often prescribe powerful immunosuppressive drugs such as methotrexate and azathioprine. These medications reduce the activity of T lymphocytes, effectively curbing the

inflammatory response. While effective, they can also indiscriminately affect both beneficial and harmful immune cells, underscoring the need for more targeted therapies.

Genetic research

As our understanding of the immune system's role in psoriatic disease deepens, researchers are taking strides toward more precise treatment options. A noteworthy breakthrough has come from Australian scientists who have identified a gene called IKBKB, which is integral to the immune response in psoriasis. Mutations in this gene can disrupt the function of regulatory T cells, which normally help keep immune activity in check. When these cells are compromised, they can contribute to the inflammation that characterises psoriasis and psoriatic arthritis.

Interestingly, individuals with just one copy of the mutated IKBKB gene may experience skin symptoms, while those with two copies are at a higher risk of developing psoriatic arthritis. This discovery not only enhances our understanding of the genetic underpinnings of these diseases but also opens the door to potential preventative measures.

The future

The identification of the IKBKB gene marks a significant milestone in psoriasis research. It allows for the possibility of screening patients to determine their risk of developing psoriatic arthritis, enabling early intervention and treatment. Additionally, advancements in genetic technology may one day allow for the editing of faulty genes, potentially restoring normal immune function.



While this prospect remains in the realm of future possibilities, it represents an exciting direction for the treatment of psoriatic disease. As researchers continue to unravel the complexities of immune responses in these conditions, we may see the emergence of therapies that are not only more effective but also tailored to individual genetic profiles.

Conclusion

The interplay between genetics and the immune system is pivotal in understanding psoriatic disease. With ongoing research and advancements in genetic technologies, there is hope for more targeted therapies that could significantly improve the quality of life for those affected by psoriasis and psoriatic arthritis. As we continue to explore these connections, the future of psoriatic disease management looks promising.

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