Ixekizumab for patients with plaque psoriasis affected by multiple sclerosis

A case report


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Abstract
Multiple sclerosis is an autoimmune demyelinating disorder of the central nervous system that shares similar immunopathogenic mechanisms with chronic plaque psoriasis, such as the overexpression of the Th17 pathway. We report the case of a patient with multiple sclerosis and severe chronic plaque psoriasis successfully treated with ixekizumab (anti IL-17A and IL-17A/F monoclonal antibody). The treatment achieved a complete skin clearance (PASI 100 response) with no adverse events or evidence of progression of the neurological disease.

Keywords: Psoriasis; Ixekizumab; Multiple sclerosis

Introduction
Multiple sclerosis is an autoimmune demyelinating disorder of the central nervous system. There are significant immunopathogenic mechanisms shared by both this disease and psoriasis, such as an overexpression of Th17 lymphocytes and associated cytokines. We report the case of a patient presenting with multiple sclerosis and severe psoriasis, successfully treated with ixekizumab (anti IL-17A and IL-17A/F monoclonal antibody), being the only case reported in medical literature, to our knowledge. A written consent was signed by the patient to publish his
clinical data and photographs.

Case report
50-year-old man with a 40-year-history of chronic plaque psoriasis, diagnosed 13 years ago with primarily progressive multiple sclerosis, with dependency for basic daily activities. His usual medication includes muscle relaxants such as baclofen 25 mg every 12 h and tizanidine hydrochloride 2 mg every 12 h.

Psoriasis was initially treated with methotrexate and acitretin, switching to ustekinumab 45 mg due to inefficacy. However, a Psoriasis Area Severity Index (PASI) of 14 persisted after increasing the dose to 90 mg every 8 weeks (Fig 1).

Due to multiple sclerosis, for which the use of anti-TNF alpha biological agents is not indicated, treatment was changed to ixekizumab 80 mg, following the dosage instructions provided in the drug's data sheet. After 4 weeks, the patient presented a PASI of 3 (Fig 2), achieving a complete skin clearance (PASI 100 response) in following visits, which is maintained at the present time, three years after the start of the treatment. No adverse events occurred during this follow-up period and laboratory analyses were normal. With respect to multiple sclerosis, the disease remains stable, with no new symptoms or signs of progression after starting ixekizumab.

Discussion
Pathogenic mechanisms of multiple sclerosis have not yet been well understood. We must consider an autoimmune aetiology, but genetic and environmental factors may play a role. Regarding these immune factors, the role of T helper type 1 (Th1), Th17, CD8+ T cells and macrophages stands out, attacking the proteins that form the myelin sheaths of the central nervous system. This provides an opening door to a connection between psoriasis and multiple sclerosis, as they share, at least partially, similar immunopathogenic mechanisms such as the overexpression of the Th17 pathway.

The evidence for this is strong, with multiple studies pointing to the involvement of Th17 lymphocytes and their cytokines in the immunopathogenesis of multiple sclerosis. Recently Li
YF et al., published a meta-analysis, finding an increase in the proportion of peripheral blood Th17 cells, and in IL-17 and IL-23 levels in patients with multiple sclerosis compared to healthy subjects.

This fact, together with the increased risk of incident psoriasis in patients with multiple sclerosis (54% higher than in the healthy population), or the existence of drugs approved for both diseases, such as fumarates, suggests that there is a certain degree of overlapping in the immunopathogenic mechanisms of both diseases.

However, there are also major differences, as the family of anti-TNF alpha drugs, used in severe psoriasis, is not indicated for patients with demyelinating diseases, including multiple sclerosis, where an exacerbation or recurrence of neurological symptoms has been observed in rare cases.

In contrast, biological anti-interleukin drugs such as ustekinumab (anti-IL-12/23) or secukinumab have been successfully used in patients with psoriasis and multiple sclerosis, showing no negative effect on the natural history of the neurological disease.

**Conclusion**

We report the case of a patient with multiple sclerosis and severe chronic plaque psoriasis successfully treated with ixekizumab. This treatment has proven to be highly effective, with complete skin clearance (PASI 100 response), and safe, with no evidence of progression of the neurological disease.

**Conflict of Interest**

The authors declare no conflicts of interest.

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References


Fig. 1. Patient's baseline condition when starting treatment with ixekizumab.

Fig. 2. Patient's condition after 4 weeks of treatment with ixekizumab.