

When Treating Skin Uncovers the Brain: A Case of Multiple Sclerosis in a Patient on Dupilumab for Atopic Dermatitis

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CASE DESCRIPTION

March 2021: diagnosis of atopic dermatitis

December 2023: start Dupilumab following first-line treatment failure

May 2025: reduced pain and temperature perception and tactile dysesthesias from the left popliteal fossa to the left lower limb

June 2025: diagnosis of relapsing-remitting multiple sclerosis (RRMS), according to the 2017 McDonald criteria

Jul 2025: therapy with Ublituximab was started

30-year-old man with atopic dermatitis



Figure 1: demyelinating lesion at C4-C5 level

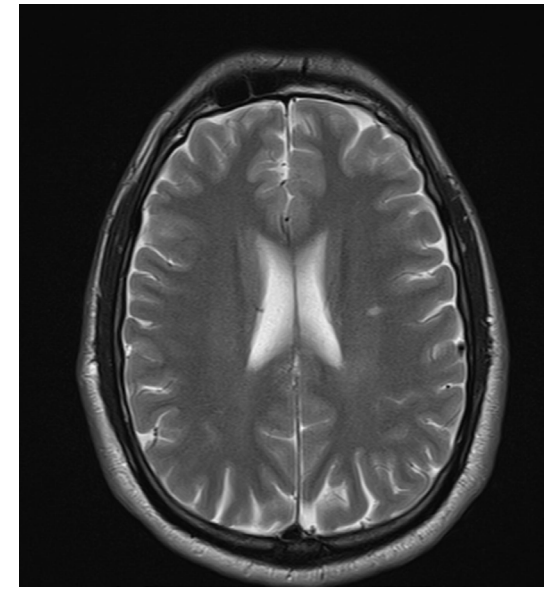
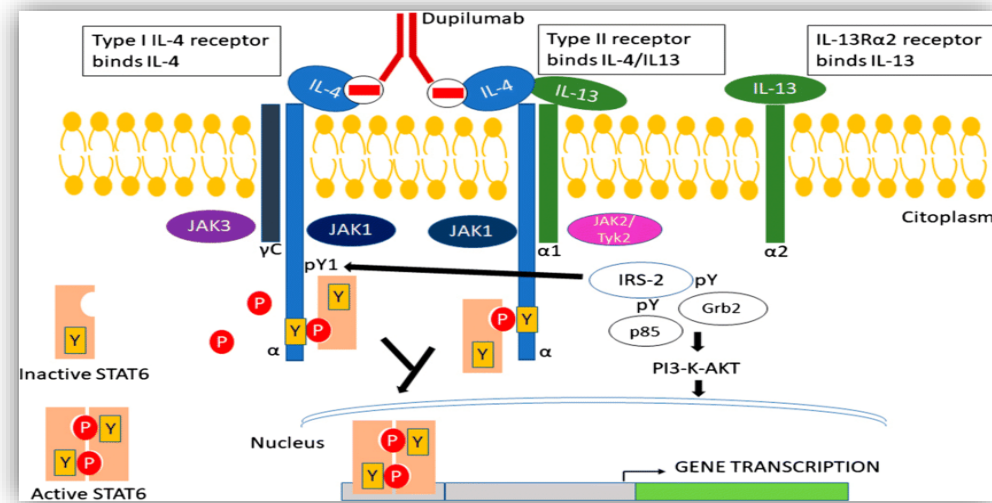


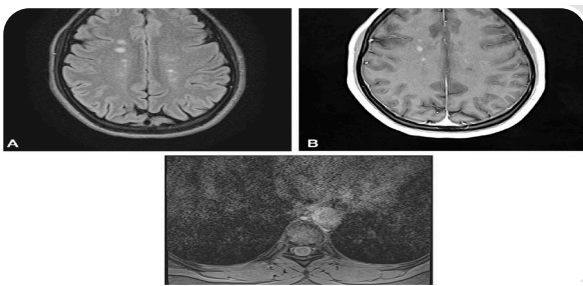
Figure 2: demyelinating lesion in the left centrum semiovale

MECHANISM OF ACTION

- **Dupilumab:** human IgG4 monoclonal antibody
- Inhibits IL-4/IL-13 signaling (IL-4Ra subunit)
- Suppresses Th2 pathways (IgE, eosinophils, epithelial remodelling)
- Possible immune shift → Th1/Th17 ↑ (linked to autoinflammatory diseases, including MS)

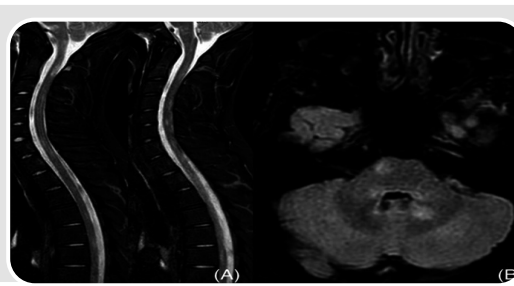


CASE REPORTS IN LITERATURE



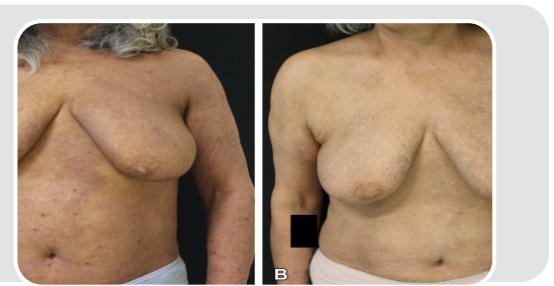
Case 1: a 34-year-old woman with undiagnosed MS who started Dupilumab 2 months before an MS relapse and 4 months prior to formal diagnosis. Dupilumab was discontinued and MS was controlled with Ocrelizumab

Laageide L et al., *JAAD Case Rep.*, 2021; 15: 33-35



Case 2: a 21-year-old with severe atopic dermatitis treated with Dupilumab from January 2019. After 18 months, he developed symptoms of MS (diagnosis on September 2020). Dupilumab was discontinued and MS was successfully controlled with Natalizumab

Gelato F et al., *Dermatol Ther.*, 2022;35(10):e15740



Case 3: patient of middle age (53) with well-established MS, receiving Teriflunomide, who were treated with Dupilumab for atopic dermatitis. None experienced relapses or MS symptoms worsening and MRI scans remained stable

Esposito M et al., *JAAD Case Rep.*, 2022;31:1-5

CONCLUSIONS AND TAKE HOME MESSAGE

- There is no proven causal link proven between Dupilumab and MS onset or relapses
- Vigilance and further case reporting are crucial to clarify potential neurological risks of IL-4/IL-13 inhibition in autoinflammatory diseases, such as multiple sclerosis

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