Radiologically Isolated Syndrome in a Patient with Atopic Dermatitis Treated with Dupilumab

Faiqa Jabeen Naeem
IMT3, Queen Elizabeth Hospital, Birmingham

Mazen Matar
Neurology Consultant, Queen Elizabeth Hospital, Birmingham

Abstract

Introduction: Atopic dermatitis (AD) is a chronic inflammatory skin disorder characterized by epidermal barrier dysfunction and immune dysregulation, predominantly mediated by type 2 helper T-cell (Th2) cytokines interleukin (IL)-4 and IL-13. Dupilumab, a monoclonal antibody targeting the IL-4 receptor α subunit, inhibits IL-4 and IL-13 signaling and is now a cornerstone therapy for moderate-to-severe AD. However, emerging evidence suggests a potential association between dupilumab and central nervous system (CNS) demyelinating disorders.

Case Presentation: We report a 33-year-old female with severe atopic dermatitis, refractory to conventional systemic therapies, who had been treated successfully with dupilumab since March 2020. After four years of therapy, she developed intermittent headaches, dizziness, recurrent falls, vomiting, photophobia, and cognitive symptoms. Magnetic resonance imaging (MRI) demonstrated a demyelinating lesion at the C7–T1 spinal level. Cerebrospinal fluid (CSF) analysis was negative for oligoclonal bands, and ophthalmologic examination revealed no papilledema. These findings were consistent with radiologically isolated syndrome (RIS). The patient was referred for multidisciplinary neurological follow-up.

Conclusion: This case highlights a potential link between long-term dupilumab therapy and the development of radiologically isolated syndrome. While the underlying mechanism remains uncertain, IL-4 and IL-13 blockade may disrupt immune homeostasis, possibly predisposing to CNS demyelination. Clinicians should maintain vigilance for new neurological symptoms in patients receiving systemic immunomodulatory therapy and consider prompt neuroimaging and specialist referral when indicated.

Keywords

Atopic dermatitis, dupilumab, radiologically isolated syndrome, demyelination, interleukin-4, interleukin-13, multiple sclerosis.

MRI Spine February 2024

FINDINGS:
Accentuated lumbar lordosis. Preserved vertebral height and alignment. Normal vertebral bone marrow signal except L3 inferior end plate with fatty infiltration.
The intervertebral discs show preserved height and T2 signal. No significant disc bulge or herniation. Mild facet joint arthropathy in the lower lumbar levels more at L5-S1. Subsequently there is moderate narrowing of the neural exit foramina and lateral recesses at L5-S1. No para vertebral soft tissue abnormality.
These appearances are not significantly different from the previous scan MR LSPINE Sept 2023.