JAK Inhibition for treatment of psoriatic arthritis in Down syndrome

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Background

• People with Down syndrome (DS) are predisposed to autoimmune conditions including inflammatory arthropathies

• Trisomy 21 (T21) hyperactivates interferon (IFN) and downstream Janus kinase (JAK) signaling

• Dysregulated innate and adaptive immunity cause psoriatic arthritis (PsA): ↑ production of Type I IFN, TNF alpha, IL-17, IL-12, IL-22, IL-23

• First-line treatments for PsA are IL-17 and IL-23 inhibitors that have not been studied in DS

• Tofacitinib is also FDA-approved to treat PsA (as a second-line agent) and targets JAK signaling

Case Report

27yo female with DS, psoriasis, hypothyroidism, and celiac disease who presents with persistent left shoulder pain

Initial Rheumatology Visit

• Over 4 months, joint pain subsequently involved left hand, elbow, shoulder, and knee, causing her to be homebound

• Pain persisted despite exercise, ibuprofen, heat therapy

• Physical exam notable for dactylitis on 3rd and 4th digits on left hand and psoriasis

• Labs showed elevated inflammatory markers

• Patient started on 5mg Tofacitinib oral twice daily

Post-Treatment

• Within 1 month: regained ability to walk long distances and participated in moderate intensity exercise

• Within 2 months: complete resolution of arthritic symptoms without adverse reactions

Methods

• Informed consent obtained in accordance with Declaration of Helsinki and specific consent obtained for case report

• Approved under Colorado Multiple Institutional Review Board (COMIRB #15-2170)

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Discussion

❖ Response to tofacitinib therapy highlights increased IFN and JAK signaling as contributing factors to autoimmunity in DS

❖ Participant’s response to tofacitinib encourages further study of whether JAK inhibitors are preferable pharmacotherapy for patients with DS and inflammatory joint diseases

References


