

## RESEARCH LETTER

**Improvement of Vestibular Neuritis in a Patient with Psoriatic Arthritis following Ixekizumab Administration**Sherry Ershadi, BS<sup>1</sup>, Shivkar Amara, BA<sup>1,2</sup>, Mark Lebwohl, MD<sup>2</sup><sup>1</sup> Boston University School of Medicine, Boston, Massachusetts<sup>2</sup> Department of Dermatology, Icahn School of Medicine at Mount Sinai, New York, New York**ABSTRACT**

Psoriatic arthritis (PsA) is a chronic inflammatory condition commonly affecting peripheral joints and the skin. Recent studies have shown an association between PsA and vestibulocochlear dysfunction. Here, we present the case of a 43 year-old male with a history of controlled psoriasis (Pso) and PsA who presented with sudden-onset severe vertigo, nausea, and vomiting. Diagnostic evaluation ruled out a central etiology, leading to a diagnosis of vestibular neuritis of unknown origin. Despite minimal improvement with conventional medications, the patient experienced significant relief from vertigo symptoms following treatment with ixekizumab, an IL-17 inhibitor used to manage his PsA and Pso. This case highlights a potential therapeutic effect of biological agents on vestibular dysfunction associated with PsA. Future research in this area may provide insights into novel treatment strategies for vestibular symptoms in patients with PsA.

**INTRODUCTION**

Psoriatic arthritis (PsA) is a chronic inflammatory disease which commonly manifests through inflammation of peripheral joints and the skin.<sup>1</sup> Research has also shown PsA's association with inner ear damage as patients with PsA have a significantly increased frequency of abnormal computerized dynamic posturography with a predominant vestibular loss pattern than controls.<sup>2</sup> Patients with PsA also have a higher frequency of abnormal oculocephalic responses than matched controls.<sup>3</sup> This pattern of vestibular system dysfunction is also seen across other autoimmune disorders, such as rheumatoid arthritis and ankylosing spondylitis.<sup>4</sup> Russo et al. noted this pattern and described autoimmune

vertigo as either an isolated immune-mediated vestibular disorder or in association with systemic autoimmune diseases.<sup>5</sup> This could suggest that flares of inflammation may be correlated with the acute experiences of vestibular dysfunction symptoms such as dizziness and vertigo in patients with PsA. Currently, treatment of vertigo in patients with psoriatic arthritis includes corticosteroids. However, no research has been done looking into the use of biologics.<sup>5</sup>

**CASE PRESENTATION**

A 43-year-old male with a long-standing history of psoriasis and psoriatic arthritis managed by ixekizumab every three weeks presented with sudden onset severe vertigo, nausea, and vomiting. During hospitalization,

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he experienced prolonged and constant vertigo symptoms that slightly improved with diazepam and meclizine. Work-up was negative for benign paroxysmal positional vertigo (BPPV) and Meniere's disease. Although his viral panel was negative, the patient was clinically diagnosed with vestibular neuritis secondary to unknown etiology. Prior to and after hospitalization, his psoriasis has continued to be clear.

Following discharge from the hospital, the patient's vertigo persisted at baseline. However, he observed an improvement in his vertigo two days after ixekizumab administration for his PsA. The patient noticed that when he was approaching his ixekizumab administration time, his vertigo would worsen, and two days following administration, it would subsequently improve. He has continued to notice this pattern every three weeks after ixekizumab administration over the four months following his hospital discharge.

## DISCUSSION

Previous research has shown that PsA is independently associated with a significantly increased risk of hearing impairment and vestibulocochlear dysfunction.<sup>6,7</sup> The exact mechanism behind the connection between autoimmune disorders and vestibular dysfunction is unknown; however, one of the autoantigen targets in PsA is ADAMTS-L5, which is also found in the neuroepithelium of the inner ear in mice.<sup>8,9</sup> Regardless of the pathophysiology underlying this correlation, it is important to identify cases where vestibulocochlear dysfunction may be connected to autoimmune disorders so that the correct treatment can be pursued. While steroids are suggested for the use of vestibulocochlear dysfunction in cases of autoimmune-related disease, there are no

studies analyzing the effect of biological medications - which abate the inflammatory response in PsA - as a means to treat or prevent this vestibulocochlear dysfunction. Moreover, systemic steroids can exacerbate the course of psoriasis.<sup>10</sup> We present a case here where symptomatic improvement of vestibular neuritis was seen after administration of ixekizumab. Our observation underscores the need for further investigation into this subject matter, thereby elucidating avenues for future research.

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