

A Novel Monoclonal Management of Geriatric Osteoarthritis: Network Meta-Analysis of Comparative Efficacy and Safety of Tanezumab against Oral NSAIDs

Derren David Christian Homenta Rampengan (1), Josh Nathaniel Jowono (2), Arnold Keane (2), Juan Alessandro Jeremis Maruli Nura Lele (3)

1- Universitas Sam Ratulangi, Manado, North Sulawesi

2- Universitas Indonesia, Depok, West Java

3- Universitas Kristen Indonesia, Jakarta

Abstract:

Introduction: Osteoarthritis (OA) affects approximately 250 million people worldwide and significantly causes pain and disability. Although NSAIDs are the first-line therapy, their use in geriatrics should be cautiously prescribed due to comorbidities, polypharmacy, and adverse events. Tanezumab is a humanized monoclonal IgG2 antibody that blocks NGF from activating trkA receptors on nociceptive neurons. Recent studies have shown tanezumab as a promising candidate for enhanced clinical effects in geriatrics. However, previous meta-analyses lacked specificity for different doses of tanezumab and did not provide a comparison with NSAIDs.

Objective: This study aims to compare the efficacy and safety of tanezumab with oral NSAIDs in geriatric osteoarthritis treatment.

Method: This study was conducted using the Preferred Reporting Item for Systematic Review and Meta-analysis (PRISMA). We systematically searched PubMed, ScienceDirect, and Google Scholar from their inceptions until April 4, 2023. The PRISMA method was utilized to evaluate potential bias. We



performed a network meta-analysis using a random effects model to compare three doses of tanezumab (2.5mg, 5mg, and 10mg) with NSAIDs. We measured heterogeneity using I² and publication bias with funnel plot.

Results: Twelve studies with low risk of bias, totalling at 7031 patients, were included into the meta-analysis. The results showed that tanezumab (5mg and 10mg) was the most effective for pain relief (WOMAC Pain; SMD -1.09; 95% CI -2.02 to -0.15; $p = 0.002$), increasing physical function (WOMAC Physical Function; SMD -5.47; 95% CI -8.71 to -2.24; $p = 0.0009$), and improving general health (PGA; SMD -3.83; 95% CI -6.94 to -0.72; $p = 0.02$). Moreover, tanezumab was shown to be safe and associated with fewer adverse effects than NSAIDs.

Conclusion: Tanezumab has more efficacy on reducing pain, improving function, and shows less adverse effects in comparison to NSAIDs. Thus, we recommend tanezumab to be used for patients with inadequate reaction to therapy or comorbidities.