Effects of Maintenance Treatment Duration on Relapse in ANCA-Associated Vasculitis

Abstract

This study analsyes the effects of maintenance treatment duration on relapse rates in patients with ANCA-associated vasculitis (AAV) by estimating Individual Treatment Effects (ITE) using advanced causal inference techniques. Real-world data from the PARADISE project, which contains comprehensive patient records, were used to assess the effectiveness of three distinct maintenance treatment durations 16, 20, and 24 months on patient outcomess. The analysis reveals a clear trend where longer maintenance treatments shows reduced relapse rates, with ITE estimates becoming increasingly positive as the treatment duration increases. Specifically, at 16 months, the average ITE was negative, indicating a higher risk of relapse, while at 24 months, the ITE turned positive, suggesting a protective effect against relapse. The study highlights significant variability in patient responses, emphasizing the critical need for personalized treatment strategies that are tailored to individual patient profiles. These findings offer valuable insights that can guide clinical decisions, particularly in optimizing the duration of maintenance treatment to improve patient outcomes in AAV management. Furthermore, this research underscores the importance of personalised approaches in managing AAV, providing a potential pathway to improve maintenance care. By using causal inference methods and real-world data, this study contributes to a more thorough understanding of treatment effectiveness, ultimately supporting the development of more effective, patient-centered care strategies in the management of AAV.