

A Comparative Evaluation of Senolytics and Disease-Modifying Antirheumatic Drugs in Elderly Patients with Autoimmune Diseases

Lijamol Varghese Thoppil, Pooja Ranjith, Nameera Zaheer Surve

Tbilisi State Medical University, Georgia

Introduction

The study aims to evaluate whether senolytics, targeting senescent cells, are more effective than conventional Disease-modifying antirheumatic Drugs (DMARDs) in managing age-related autoimmune diseases. It highlights the significance of senolytics in these conditions, initially tested in mice with ongoing human trials. Objectives are to review molecular mechanisms and compare the efficacy of senolytics and DMARDs in older individuals.

Methods

The literature review initially found 20 papers, selecting 13 through databases like PubMed, Ovid, and Google Scholar using keywords such as senolytics, elderly, and autoimmune diseases. Inclusion criteria were systematic reviews and meta-analyses that provided empirical data on the molecular mechanisms, clinical effectiveness, or safety profiles of senolytics, specifically in elderly populations with autoimmune diseases. Exclusions included studies on non-senolytic therapies and single case reports, primarily focusing on animal studies. Data on authors, publication years, journals, sample sizes, outcomes, and side effects were compiled into an Excel database to compare senolytics with DMARDs based on predefined objectives.

Results

Senolytics remove senescent cells, reducing inflammation and restoring immune function in age-related autoimmune diseases. By blocking survival pathways like Bcl-2 family proteins, senolytics induce cell death, reduce proinflammatory SASP factors, and improve tissue repair. This approach holds potential for treating autoimmune conditions in the elderly. As Table 1 illustrates, senolytics show potential, yet unlike DMARDs, which are validated through extensive trials, their effectiveness and safety remain unconfirmed.

Conclusion

Senolytics show promise in treating age-related autoimmune diseases by targeting senescent cells. This approach stands in contrast to the well-established DMARDs, which, while effective, are known for their significant side effects. Further research is needed to determine their efficacy and safety.

Keyword

senolytics, elderly, autoimmune disease, Disease-Modifying Antirheumatic Drugs