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The Role of Daratumumab in Treating Pure Red Cell Aplasia After Allogeneic Transplant in Patients With ABO Incompatibility: A Systematic Review

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INTRODUCTION

Pure red cell aplasia (PRCA) is a rare complication following allogeneic hematopoietic stem cell transplantation (HSCT), especially in patients with ABO incompatibility. Daratumumab, a monoclonal antibody targeting CD38, has emerged as a promising treatment option. This review aims to assess the effectiveness of daratumumab in managing PRCA in patients with ABO incompatibility post-allogeneic transplant.

METHOD

Following PRISMA guidelines, Clinicaltrial.gov, PubMed, and Cochrane Register of Controlled Trials were searched using MeSH terms and keywords “pure red cell aplasia” AND “ABO” AND “daratumumab” from inception to April 30, 2024. Our literature search yielded 25 articles, and after screening, 7 studies reporting outcomes of daratumumab in PRCA were included.

RESULTS

- The review included 28 patients from 7 studies who were treated with daratumumab for PRCA following allogeneic HSCT. Median age was 46 years (20-70), and 64% were male.
- The primary reasons for transplant were acute myeloid leukemia (10 patients), acute lymphoblastic leukemia (9 patients), myelodysplastic syndromes (6 patients), and other conditions (3 patients).
- PRCA manifested at a median of 5 months (2-10) posttransplant, and the median number of previous treatments was 3 (2-5). The most commonly used treatments before daratumumab were corticosteroids (75%), rituximab (50%), plasma exchange (53%), and erythropoietin-stimulating agents (39%). Daratumumab was administered at a median dose of 16 mg/kg weekly for 8 weeks, followed by biweekly and monthly maintenance doses in some cases.
- The overall response rate was 85%, with 20 patients achieving complete response (CR) and 4 patients showing partial response (PR). Responders demonstrated significant improvements in hemoglobin levels, leading to reduced transfusion requirements. The median hemoglobin level before daratumumab treatment was 6.5 g/dL, which increased to 10.2 g/dL after treatment. The median time to response was 4 weeks (2-8), and among the 20 patients who achieved CR, 17 maintained their response at a median follow-up of 12 months.
- Neutropenia was the most common side effect, observed in 35% of patients.

CONCLUSIONS

Daratumumab exhibits substantial efficacy in treating PRCA post-allogeneic HSCT in patients with ABO incompatibility, with a high response rate and a favorable safety profile. However, further studies with larger cohorts and longer follow-up periods are necessary to validate these findings.

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