(PB3356) ADVANCING PERSONALIZED MANAGEMENT IN MULTIPLE MYELOMA: THE UNTAPPED VALUE OF MINIMAL RESIDUAL DISEASE-GUIDED TREATMENT

Topic: 14. Myeloma and other monoclonal gammopathies - Clinical

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Background

Minimal residual disease (MRD)-driven treatment strategies have been integrated in guidelines and clinical practice in other hematologic cancers such as chronic and acute leukemias, while their usefulness in multiple myeloma (MM) is still unclear. MM guidelines recommend the assessment of MRD status for prognostication and while MRD negativity rate became an important trial endpoint, the role of MRD-guided treatment decisions in MM is still under investigation.

Aims

We explored MRD-guided treatment strategies and associated outcomes in multiple myeloma.

Methods

Utilizing REal-time AI-assisted Living systematic review (REAL-SLR) conducted in MM, according to PRISMA and Cochrane guidelines. PubMed and conference proceedings were reviewed to identify trials reporting outcomes of treatments for MM. For each included study, trial methodology, efficacy, safety and quality of life data was extracted.

Results

As of February 25th, 2026, 715 studies included in REAL-SLR database, 20 studies involved treatment decisions based on MRD status, most often during consolidation and maintenance phases (8 studies each). Four studies investigated the role of active therapy for persistent MRD positivity or MRD relapse.
MRD surveillance as alternative to indefinite maintenance and adjusted maintenance schedule in MRD negative patients are strategies that may benefit standard-risk patients. MASTER and GEM2014 trials showed a cumulative incidence of MRD relapse/progression of 0%-4% at 12 months after therapy cessation and 16%-33% at 5 years, respectively, among patients with standard risk who did not receive (MASTER) or stopped (GEM2014) maintenance upon achieving MRD negativity. Alternatively, lenalidomide maintenance did not show significant improvement in progression-free survival, overall survival or sustained MRD negativity compared to no maintenance in patients who achieved MRD negativity after autologous stem-cell transplant (ASCT).
Consolidation and ASCT benefited patients who were MRD positive post-induction, leading to deeper response and conversion to MRD negative status. However, MIDAS study showed that MRD outcomes did not significantly improve with ASCT compared to isatuximab, carfilzomib, lenalidomide, and dexamethasone consolidation in patients who achieved MRD negative status post-induction. Moreover, tandem ASCT did not confer better MRD outcomes compared to single ASCT among patients who were MRD positive post-induction.
Early intervention upon MRD relapse and treatment of persistent MRD with daratumumab significantly delayed progression, restored MRD negativity and resulted in high rates of conversion to MRD negative, as shown in PREDATOR-MRD trial and a study by Yan L et al.

Summary/Conclusion

Use of MRD status to guide treatment in MM holds great potential for improving outcomes and reduce burden of treatment including risks of serious adverse events. MRD-guided strategies require further, more systematic investigations, including predefined studies, as they represent viable options for personalizing therapy while maintaining effectiveness and potentially minimizing side effects and overall costs.