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STEM CELL TRANSPLANTATION AS A THERAPEUTIC STRATEGY IN MDS: A LITERATURE REVIEW

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Introduction: Myelodysplastic syndromes (MDS) are a heterogeneous group of clonal hematopoietic disorders marked by ineffective hematopoiesis, cytopenias, and variable risk of progression to acute myeloid leukemia (AML). Prognosis is determined by risk scores such as IPSS-R and the newer IPSS-M, which combine clinical, cytogenetic, and molecular data. Supportive care and hypomethylating agents may delay progression, but allogeneic hematopoietic stem cell transplantation (allo-HSCT) remains the only curative option. Its use is limited by age, comorbidities, donor availability, and transplant-related risks, although advances in conditioning, GVHD prophylaxis, and supportive care have expanded eligibility to older and more complex patients. **Objectives:** This study aims to evaluate the indications, risks, and outcomes of Hematopoietic Stem Cell Transplantation (HSCT) in patients with MDS. **Material and methods:** This is a literature review conducted using articles published from 2020 to 2025. The selection was carried out through PubMed using the descriptors "Myelodysplastic Syndromes" and "Hematopoietic Stem Cell Transplantation". After selection, duplicate articles, those with restricted access, and those unrelated to the study objective were excluded, resulting in 10 articles reviewed for the study. **Discussion:** Allogeneic hematopoietic stem cell transplantation (allo-HSCT) remains the only curative treatment for intermediate- to high-risk myelodysplastic syndromes (MDS), with multiple prospective and registry studies confirming its survival advantage over non-transplant strategies. Non-relapse mortality (NRM) can reach 40%, reinforcing the need for individualized decisions and meticulous patient selection. Advances in reduced-intensity conditioning regimens, graft- versus-host disease (GVHD) prophylaxis, and supportive care have expanded transplant eligibility to older patients, shifting emphasis from chronological age to physiological reserve and functional status, while comorbidities, although prognostically important, can often be mitigated through pre-transplant optimization and multidisciplinary management. High-risk molecular subtypes, such as TP53-mutated MDS, continue to show poorer outcomes even after transplantation, underscoring the need for post-HSCT maintenance strategies and targeted therapies. Early referral, before disease progression, and the use of bridging treatments like hypomethylating agents are associated with improved survival, while advances in donor availability, including haploidentical grafts, have increased access to HSCT and improvements in supportive care have reduced morbidity; however, relapse and NRM remain significant challenges, requiring ongoing refinement of patient selection, timing, and post-transplant management. **Conclusion:** Allogeneic HSCT is the only curative option for intermediate- to high-risk MDS, with clear survival benefits over non-transplant approaches. NRM up to 40% demands careful selection, while advances in conditioning, GVHD prophylaxis, and supportive care expand eligibility. Early referral, bridging therapy, and improved donor access enhance outcomes, but high-risk molecular subtypes still fare poorly.

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