OUTCOMES OF ALLOGENEIC HSCT IN PATIENTS WITH PAROXYSMAL NOCTURNAL HEMOGLOBINURIA (PNH) IN RESOURCE CONSTRAINED SETTINGS

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Introduction

- Paroxysmal nocturnal hemoglobinuria (PNH) is a rare, acquired clonal hematopoietic stem-cell disorder caused by a somatic mutation in the *PIGA* gene.
- This mutation disrupts the synthesis of glycosylphosphatidylinositol (GPI) anchors, resulting in the loss or reduced expression of complement-regulatory proteins, particularly CD55 and CD59, on the surface of blood cells. Consequently, affected red blood cells become highly susceptible to complement-mediated destruction, leading to chronic intravascular hemolysis, anemia, hemoglobinuria, fatigue, and other related symptoms.

Aim

- This study aimed to evaluate the outcomes of hematopoietic stem-cell transplantation among patients with paroxysmal nocturnal hemoglobinuria, with particular emphasis on overall survival (OS) and progression-free survival (PFS) following transplantation.
- By assessing both short- and long-term survival outcomes, the study sought to determine the effectiveness and durability of transplantation as a potentially curative treatment and to provide real-world evidence regarding its role in the management of PNH.

Method

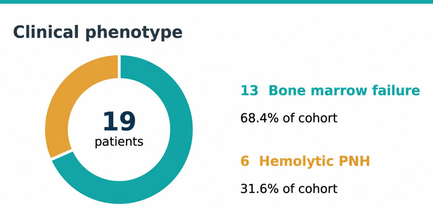
- A total of 54 patients were diagnosed with PNH in Shifa International Hospitals from 1st January 2016 to 31st December 2024, out of which 19 underwent allogeneic HSCT.
- We conducted a retrospective study of 19 patients (Median age 29 years) who underwent Allogeneic HSCT in the Bone Marrow Transplant Center of Shifa International Hospital from 1st January 2016 to 31st December 2024.
- The observed parameters included age and gender of the patients, type of PNH, history of thrombosis, conditioning regimen used, source of stem cells, donor type, median day of engraftment, complications of transplant, rates of graft versus host disease, overall survival, and progression-free survival.

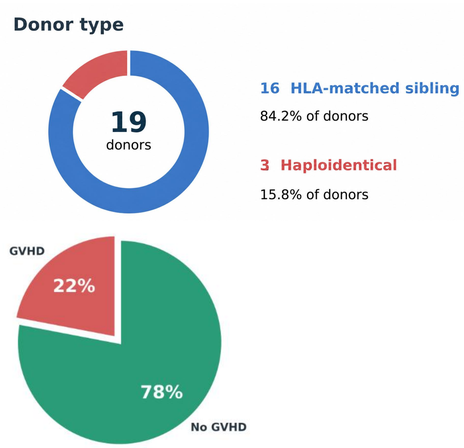
Conclusion

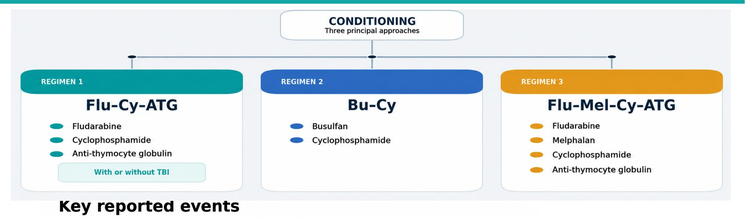
- The findings of this study indicate that hematopoietic stem-cell transplantation can achieve durable remission and potentially curative outcomes in most appropriately selected patients with PNH in our setting.
- This is particularly important in resource-constrained countries such as Pakistan, where complement inhibitors, including eculizumab, are either unavailable or financially inaccessible to most patients because of their high cost and the need for prolonged treatment. In these circumstances, transplantation may represent a practical and potentially curative treatment option for eligible patients with a suitable donor.

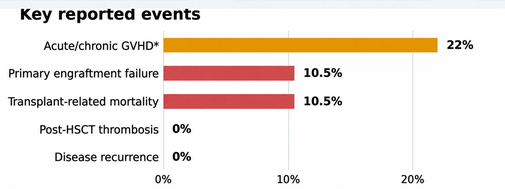
Results

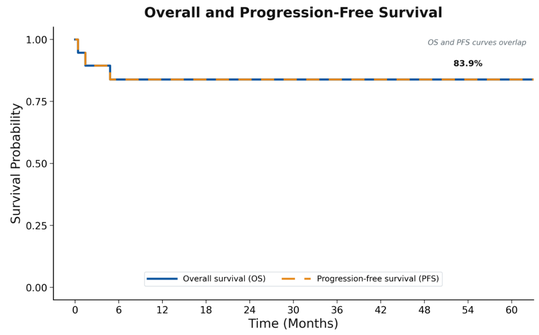
- The majority of the Patients were male. All fully HLA-matched patients survived.
- Three patients died, of whom two had transplant-related mortality.
- Primary engraftment failure occurred in two patients. The risk factors associated with mortality were Haplo-identical matching, primary engraftment failure, and high anti-HLA antibodies.
- The cumulative incidence of acute and chronic GVHD was 22%. No thromboembolic events nor recurrence of the disease were noted following transplant.
- At a median follow-up duration of 32.9 months, the overall survival and progression-free survival at one and two years were 83.9%.











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