Burden of Illness Among Patients With Transfusion-Dependent β-Thalassemia in Spain: A Registry-Based Study

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INTRODUCTION

- Beta-thalassemia is a rare genetic disorder wherein patients have reduced or absent β-globin production, resulting in chronic anemia and other serious complications that can lead to early death[1]
- Patients with transfusion-dependent β-thalassemia (TDT) require lifelong care, including frequent red blood cell transfusions (RBCTs) that lead to iron overload, end organ damage, and the need for regular iron chelation therapy (ICT) for survival[2-5]
- A registry-based study was conducted in Spain to assess the burden of illness among patients with TDT

OBJECTIVE

- To describe the burden of acute complications, chronic complications, and treatment utilization among patients with TDT in Spain

METHODS

Study Design and Data Source

- A retrospective cohort study was conducted using data from the Spanish Registry of Hemoglobinopathies and Rare Anemias of the Spanish Society of Hematology Pediatric Oncology-Spanish Hematology and Hemotherapy Society (SEHOP-SEHH)
- Patients with a diagnosis of TDT were identified between January 1, 2014, and December 31, 2021
- The index date was the date of TDT diagnosis
- Patients were followed up until the earliest occurrence of death, loss to follow-up, or the end of the study period (December 31, 2022)

Patient Identification

- Patients enrolled in the Spanish Registry of Hemoglobinopathies and Rare Anemias (REHem-AR) who received ≥8 RBCTs in any 1-year period were diagnosed as having TDT and were eligible for inclusion in this study
- Patients were required to be 12 years of age or older at study inclusion, with at least 1 year of follow-up data
- Patients were excluded if they met any of the following exclusion criteria:
  - Evidence of hereditary persistence of fetal hemoglobin or evidence of hematopoietic stem cell transplantation (HSCT) at any time in their medical record (before, at, or after index date)
  - Diagnosis of α-thalassemia or sickle cell disease

Study Measures and Analysis

- Descriptive analyses were conducted for demographics, clinical complications, and treatment utilization
  - Mean (standard deviation [SD]), median (interquartile range [IQR]), and minimum and maximum values were reported for continuous variables
  - Frequencies/proportions (n, %) were reported for categorical variables
- Demographics were assessed at the index date
- Acute complications during follow-up, chronic complications during the entire study period, and treatment utilization during follow-up were summarized descriptively
- The rate of RBCTs was reported as per patient per year (PPPY)

RESULTS

Patient Demographics

- A total of 44 patients with TDT met the study eligibility criteria (**Table 1**)
- The mean age (SD) of the patients was 14.0 (2.0) years, and 55.0% of the patients were male (**Table 1**)
- The mean duration of follow-up (SD) of patients was 26.0 (2.4) years (**Table 1**)

Table 1. Baseline Demographics

Patient characteristics	TDT (N=44)
Age at index date, years	
Mean (SD)	14.0 (2.0)
Median (IQR)	13.0
Min, max	12.0, 34.0
Sex, n (%)	
Male	25 (55.0)
Female	19 (45.0)
Country of birth, n (%)	
Spain	21 (47.7)
Outside Spain[a]	18 (40.9)
Unknown	5 (11.4)
Duration of follow-up, years	
Mean (SD)	26.0 (2.4)
Min, max	12.0, 47.0

[a]Living but not born in Spain.
IQR, interquartile range; max, maximum; min, minimum; SD, standard deviation; TDT, transfusion-dependent β-thalassemia.

Transfusions, Acute Complications, and Chronic Complications

- RBCTs were administered at a rate of 21.7 transfusions PPPY (SD: 6.0) during follow-up (**Table 2**)
- Acute complications such as gallstones (22.5%) and deep vein thrombosis (9.0%) were reported (**Table 2**)
- Hemosiderosis or transfusion-related iron overload was reported in 70.5% of the patients (**Table 2**)
- Serious chronic complications were reported during the study period (**Table 2**)
  - Hepatobiliary complications (70.5%)
  - Bone and joint problems (43.0%)
  - Endocrine complications (25.0%)

Table 2. Clinical Complications

Clinical complications (N=44)	Prevalence, n (%)
Acute complications	
Gallstones	10 (22.5)
Deep vein thrombosis	4 (9.0)
Hepatitis B or C	2 (4.5)
Chronic complications	
Hemosiderosis/ transfusion-related iron overload	31 (70.5)
Hepatobiliary complications	31 (70.5)
Bone and joint problems	19 (43.0)
Endocrine complications	11 (25.0)
Cardiac complications	8 (18.0)
Pulmonary hypertension	4 (9.0)
Renal complications	3 (7.0)

Treatment Utilization

- Almost all patients were treated with ICT (95.0%) (**Table 3**)
  - Deferasirox (89.0%) was the most frequently used ICT
  - Deferoxamine (34.0%) was the next most frequently used ICT
- Additionally, 59.0% of patients underwent splenectomy (**Table 3**)

Table 3. Treatment Use

Treatment (N=44)	Prevalence, n (%)
Any ICT	42 (95.0)
Deferasirox	39 (89.0)
Deferoxamine	15 (34.0)
Splenectomy	26 (59.0)
Vitamin D prophylaxis	19 (43.0)
Luspatercept	5 (11.0)

ICT, iron chelation therapy

Limitations

- There is potential for under-reporting or lack of reporting of complications by participating hospitals
- There is a potential for a lack of generalizability of results, as enrollment is based on voluntary participation of healthcare personnel and is skewed toward younger patients

CONCLUSIONS

- **Patients with TDT in Spain experience substantial burden from serious chronic complications while on standard of care, with frequent RBCTs and ICT for management of TDT**
- **These findings indicate a high unmet clinical need and the importance of novel therapies for patients with TDT**

References

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Disclosures

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