Introduction

Myelodysplastic syndromes (MDS) are a group of myeloproliferative disorders characterized by ineffective hematopoiesis and increased risk of leukemic evolution. The annual incidence of MDS is estimated to be 4.1 per 100,000 with a median age of diagnosis of 70 years. Patients with higher-risk (HR) MDS, which accounts for 30% of MDS, have a poor prognosis with a median survival of 18 months and a high risk of progression to acute myeloid leukemia (AML). Patients with lower-risk (LR) MDS, which accounts for 70% of MDS, have a median survival of 8 years and have a low risk of progression to AML. Management of LR MDS is mostly aimed at treating anemia using erythropoiesis-stimulating agents, iron-chelation therapy, and repeated blood transfusions.

Objectives

To describe the clinical and economic burden of blood transfusions, their immediate complications, and associated costs in patients with transfusion-dependent LR MDS.

Methods

This retrospective, observational study used data from the French PMSI-MCO nationwide hospital discharge database.

Study period

Patients with MDS who were hospitalized as an inpatient or outpatient and received a blood transfusion between 2012 and 2013, were included in the analysis and followed until December 31, 2018.

Patient comorbidities were analyzed for up to 2 years prior to inclusion in the study.

Patients followed until the end of the study or until death.

Inclusion criteria

Adult patients (≥ 18 years) with a primary diagnosis, related diagnosis, or associated diagnosis of LR MDS between 2012 and 2013 were identified by International Classification of Diseases (ICD-10-CM) code D46 and included in this analysis.

Patients with an average of 1 transfusion every 2 months relative to their duration of follow-up, and a minimum of 2 transfusions during the study period, were identified by ICD-10-CM Z513 or Classification Commune des Actes Médicaux (CCAM) code (FELF009, FELF001, FELF100, FELF003).

Exclusion criteria

Patients with HR MDS were identified by the following treatments excluded from the study:

- Stem cell transplantation (allo-SCT)
- (Homogenous Group of Patients [GHM] code 27229 from Diagnosis-Related Group [DRG] and CCAM code FELF009)
- Chemotherapy (ICD-10-CM 2511)
- Hypomethylating agents, for example, azacitidine (common dispensing unit [ICDU] number 340889726726)
- Patients who progressed to AML (ICD-10-CM C920).

Patient characteristics at inclusion were cancer (24.1%), heart failure (18.2%), and diabetes (16.1%) (Table 1).

Associated costs during the study period were calculated per patient per year (PPPY) from the national health insurance (NHI) perspective.

Costs associated with transfusions

The mean (SD) number of transfusions per patient was 20 (28) transfusions over the 30 months relative to their duration of follow-up, and a minimum of 2 transfusions during the study period.

The frequency of transfusions per month was 64.9%.

The estimated survival probability at 17 months was 50% (Figure 1).

Results

The average length of a hospital stay was 8 days.

27.7% of patients who were hospitalized arrived in the emergency department.

14.3% of patients with 1 hospitalization were moved to intensive care or continuous monitoring during their hospital stay.

Costs associated with transfusions

The median cost of a hospital stay associated with transfusion complications was EUR 443 (Table 2).

Table 1. Distribution of transfusion stay costs and annual cost per patient

<table>
<thead>
<tr>
<th>Costs, EUR</th>
<th>Cost of complication stays (N = 1,628)</th>
<th>Cost of complication stays (N = 5,081)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean (SD)</td>
<td>4,886 (7,052)</td>
<td>9,116 (16,745)</td>
</tr>
<tr>
<td>Median</td>
<td>1,632 (2,869)</td>
<td>3,272 (5,385)</td>
</tr>
<tr>
<td>IQR</td>
<td>1,000–2,471</td>
<td>1,000–4,489</td>
</tr>
<tr>
<td>Range</td>
<td>256–186,489</td>
<td>271–432,932</td>
</tr>
</tbody>
</table>

Figure 1. Propretion of patients by comorbidities at inclusion

- COPD: chronic obstructive pulmonary disease
- Heart: heart failure
- Kidney: kidney failure
- Cancer: cancer history
- Diabetes: diabetes history

Conclusions

- This retrospective, observational study using data from the French PMSI-MCO nationwide hospital discharge database demonstrates the major economic and clinical burden of transfusions in patients with LR MDS, both in terms of public health and the economic impact for health insurance in France.
- HR MDS is associated with a high risk of complications and associated costs.

Acknowledgments

The study was supported by Bristol-Myers Squibb.

Disclosures

- G.J.: BMS - former employee, equity ownership

References