INTRODUCTION

The treatment landscape for chronic myeloid leukemia in chronic phase (CML-CP) has changed significantly in the past 2 decades: 5 tyrosine kinase inhibitors (TKIs) have been approved for CML treatment, and patient outcomes have improved dramatically.1

Despite this improvement, approximately 50% of frontline patients with CML on imatinib will eventually experience treatment failure, with many requiring second and subsequent lines of therapy due to resistance or intolerance.1

There is no clearly defined treatment sequence for patients after first and second-line TKI therapy (Figure 1). Here, we present the results of a real-world evidence study that assesses the patterns of TKI use in patients with CML-CP who have been treated with imatinib in clinical practice in 4 European countries.

RESULTS

A total of 105 (24.1%), 51 (11.0%), and 143 (32.8%) patients with CML-CP who received or were offered a TKI in the INFINITY, PHAROS, and Swedish CML registries, respectively, started third- and later-line (3L+) TKI therapy.

The real-world data presented in Figure 2 demonstrate a lack of consensus regarding TKI treatment sequencing across 3 registries in patients starting a 3L+ TKI therapy: however, some patterns were observed:

- Most patients were treated with imatinib in 1L, nilotinib in 2L, and dasatinib in 3L.
- Most 3L+ patients were treated with 2G TKIs nilotinib and dasatinib, while a few were treated with the 2 most recently approved TKIs bosutinib and ponatinib.

Among those who started a 3L+ TKI therapy in the INFINITY, PHAROS, and Swedish CML registries, respectively, 165, 169, and 172 eligible patients were included in the current analysis.

Median age at diagnosis ranged from 53 to 64 years, with most patients being older than 50 years (Figure 3).

Proportion of female patients was as follows:

- 48.6% in INFINITY
- 47.1% in PHAROS
- 46.4% in Swedish CML

Duration of treatment was longest in patients receiving nilotinib and dasatinib across the 3 registries, which may in part be due to imatinib not commonly being prescribed in this setting and differences in regulatory approval timelines for bosutinib and ponatinib.

Primary reasons for treatment intolerance were the most common reasons for treatment discontinuation in patients receiving 3L+ therapy.

Between 24.1% and 34.9% of patients who started a 3L+ TKI required 3L+ therapy, highlighting the need for additional treatment options that are efficacious and well tolerated for this patient population.

METHODS

This is a retrospective, noninterventional, descriptive cohort study based on secondary use of data from 3 existing CML registries: Czech INFINITY, Dutch PHAROS, and Swedish CML:

The observation period covered January 1, 2008, until the last available data of follow-up for each registry (6-12 years depending on the registry) detailed below:

- Czech INFINITY registry: October 21, 2020
- Dutch PHAROS registry: April 30, 2014 (February 26, 2016, for overall survival)
- Swedish CML registry: December 31, 2014

Patients aged 18 years or older with CML-CP initiating a second (2L) TKI after registry enrollment were included in this analysis.

The exposure of interest for inclusion in this analysis was defined as treatment with 1 of the following TKIs: nilotinib, dasatinib, nilotinib, bosutinib, or ponatinib.

Descriptive statistics were used to describe patient demographics and treatment duration. No comparisons or hypothesis testing were performed. Data were not pooled, and results for each registry were reported separately.

Alasde diagrams were used to describe and represent all treatment patterns.

CONCLUSIONS

-Based on observed real-world treatment patterns, which provide insights into TKI access in various settings, no common agreement with respect to sequencing of TKIs was observed across the 3 registries in patients with CML-CP on 3L+ therapy.

-Most 2L+ patients were treated with 2G TKIs nilotinib and dasatinib, and a small proportion of 3L+ patients were treated with the 2 most recently approved TKIs, bosutinib and ponatinib.

-Duration of treatment was longest in patients receiving nilotinib and dasatinib across the 3 registries, which may in part be due to imatinib not commonly being prescribed in this setting and differences in regulatory approval timelines for bosutinib and ponatinib.

-Treatment failure and intolerance were the most common reasons for treatment discontinuation in patients receiving 3L+ therapy.

-Between 24.1% and 34.9% of patients who started a 3L+ TKI required 3L+ therapy, highlighting the need for additional treatment options that are efficacious and well tolerated for this patient population.