P1018 TREND OF CIRCULATING CD34+ CELLS IN MYELOFIBROSIS PATIENTS TREATED WITH RUXOLITINIB

Topic: 16. Myeloproliferative neoplasms - Clinical

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Background:

BCR-ABL1-negative myeloproliferative neoplasms (MPNs) are variably characterized by an increase in peripheral blood (PB) and bone marrow (BM) progenitor cells. More specifically, in myelofibrosis (MF) patients (pts) it has already been reported that the number of circulating hematopoietic precursors is consistently high, with a relative circulating CD34+ cells count of 15 ×10^6/L as the most frequently used criterion to discriminate between MF and other MPNs. Nowadays, ruxolitinib (RUX) is used for the treatment of splenomegaly and related symptoms in MF.

Aims:

To evaluate CD34+ cells levels in a series of primary (PMF) and secondary (SMF) MF pts at baseline and during treatment with RUX and identify any possible correlation with response to treatment.

Methods:

Between Oct 2014 and Dec 2021, CD34+ cells count from 49 consecutive pts with PMF or SMF (32 males and 17 females; median age at RUX start, 70.6 years) was retrospectively assessed at baseline and after 3, 6, 12 and 24 months (mts) from RUX start. All pts were treated with RUX according to current indications, requiring an IPSS risk of at least intermediate-1. At the time of CD34+ cells measurement, a complete blood cells count was available for all pts and their spleen measurement [expressed as the distance from the left costal margin (BCM) in cm] was taken.

Results:

24 pts were classified as having PMF (10 in the pre-fibrotic and 14 in the overt fibrotic stage) and 25 as having SMF (15 had PPV- and 10 PET-MF).

JAK2V617F mutation was detected in 38 (77.6%) cases, CALR mutations in 8 (16.3%), and MPL in 1 (2%). The remaining 2 pts (4.1%) were defined as “triple-negative”.

The median absolute number of circulating CD34+ cells in the overall population at diagnosis was 83.5/mcL (range, 1-1528/mcL), with 31 (63.3%) pts showing >15 CD34+ cells/mcL.

At RUX start (after a median time from MF diagnosis of 33.9 mts), median absolute number of CD34+ cells was 123/mcL (range, 2-1528/mcL), with 43 (87.7%) cases showing higher than normal levels.

As expected, spleen measurements progressively decrease during the first mts of RUX (Fig. 1A): in particular, the spleen was palpable at a median of 10 cm BCM at RUX start, 5 and 3.5 cm after 3 and 6 mts of therapy, respectively. On the contrary, it increases up to 5.5 cm after 12 mts, without significant changes after 24 mts.

Interestingly, with the exception of a transient increase after 3 mts of RUX therapy, a progressive reduction in the absolute number of PB CD34+ cells after 6 and 12 mts was documented in the whole cohort, with only a slight increase after 24 mts (Fig. 1B). However, considering PMF and SMF separately, a different behavior of CD34+ cells...
was detected: in detail, in PMF pts circulating hematopoietic precursors gradually decreased from 3 to 24 mts of RUX therapy in parallel with the persistence of a reduction in the spleen size (Fig. 1C). On the contrary, in SMF pts both CD34+ cells and spleen size still improve up to 6 mts of RUX, while they both regrow after 12 and 24 mts of treatment (Fig. 1D).

**Summary/Conclusion:**

Preliminary results of our study confirm that PB CD34+ cells are increased in the majority of MF pts, both at diagnosis and during follow-up. To the best of our knowledge, we have first reported the changes in circulating CD34+ cells count during RUX, showing a parallel decrease in spleen diameter and circulating hematopoietic precursors.

These findings suggest that this tool could facilitate the assessment of RUX responses in MF pts, although this needs to be confirmed by further studies.