Ropeginterferon alfa-2b for young high-risk patients with Essential Thrombocythemia- Evaluation of clinicohematologic response, and safety profile: single centre experience

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Background

For more than three decades Interferon (IFN) has been acknowledged as an effective treatment option in patients with Philadelphia chromosome negative myeloproliferative neoplasms (Ph- MPNs). Unlike other available drugs, Interferon was shown to induce not only clinico-hematological but also molecular responses in a significant proportion of MPN patients, thus modifying the course of the disease.
Unfortunately, the numerous adverse effects of Interferon leading to variable drug tolerability, need for frequent parenteral administration, and lack of official regulatory approval for treatment in MPNs, were major factors in its disuse over the years. Nevertheless, because of its already well-established potency in MPN treatment, the interest has been renewed with the introduction of novel pegylated IFN formulations like ropeginterferon alfa-2b. However, the accessibility is currently limited only to patients with Polycythemia Vera (PV) due to the lack of approval in Essential Thrombocythemia (ET) despite the fact that numerous studies on ET patients treated with IFN over the years showed promising results.

Objectives

- Our main goal was to investigate the clinical benefits of ropeginterferon alfa-2b in patients with ET;
- We report our experience in 16 young patients with BCR-ABL negative MPNs, diagnosed and treated with ropeginterferon alfa-2b at the University clinic for hematology in Skopje, R. of North Macedonia with median follow-up period of 24 months.

Material and methods

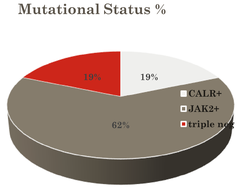
- In this retrospective observational study we tested the efficiency of ropeginterferon alfa-2b in MPNs focusing on clinic-hematological response and safety profile in 16 patients.
- Response to treatment was evaluated using ELN, IWG-MET and EUMNET standardized criteria sets and occurrence of side effects was recorded.
- Evaluation of clinic-hematological response was performed every two weeks along with the drug administration.

Results

- 11 patients were female (69%), with average age at diagnosis of 36 years (17-51);
- 12 patients had Essential Thrombocythemia (ET), one Polycythemia Vera (PV) and three patients had hypercellular phase of Primary Myelofibrosis (PMF);
- JAK2V617F mutation was detected in 10 (62.5%), CALR mutation in three (19%), and three patients were triple-negative (19%);
- The revised IPSET score was used to define high risk patients;
- Bone marrow biopsy before treatment initiation was performed in all patients;
- Splenomegaly was present in four (25%) while three patients underwent splenectomy because of splenic vein thrombosis;
- In seven pts (43.7%) ropeginterferon alfa-2b was used as first line treatment (five ET, one PV, and one prefibrotic phase of PMF);
- **Complete hematological response was observed in 12 patients (75%), with average time to blood count normalization at 8 weeks, using average dose of 150mcg (100-250);**
- In terms of side effects only flu-like symptoms were observed in one patient, without need of drug discontinuation;
- No disease progression was recorded during the follow-up period.

Patients initials	Age	Sex	Diagnosis	Year of diagnosis	Mutation	Spleen size (cm)	Dosage of Ropeginterferon alfa-2b	Initial Hemoglobin (Hb) g/L	Initial White Blood Cells (WBC) x10⁹/L	Initial Platelet count (Plt) x10⁹/L	Control Hb g/dL	Control WBC x10⁹/L	Control Plt x10⁹/L
EJ	29	ж	ET	2016	JAK2+	11	200mg	133	6.3	1138	141	5.4	435
CT	34	ж	ET	2011	JAK2+	17	100mg	126	8	213	133	11	423
MS	17	ж	PRV	2021	triple neg	splenectomy	250mg	136	8	998	125	14	612
MC	43	ж	ET	2016	JAK2+	15	100mg	149	8	1035	125	10	355
AA	51	м	ET	2016	triple neg	11	50mg	139	5.6	161	157	7.5	241
АГ	30	м	ET	2021	CALR+	12	150mg	159	10	1160	150	6	369
EA	37	ж	ET	2015	JAK2+	16	100mg	146	10	820	145	6	285
КК	34	ж	ET/MF	2017	triple neg	11	150mg	109	7	611	113	6	846
НСМ	31	ж	MPN	2016	JAK2+	12	250mg	151	15	895	143	7	375
ЈК	39	ж	MPN	2021	JAK2+	14	150mg	155	15	1000	147	9	517
EA	20	м	ET	2022	CALR+	11	100mg	126	8.4	1270	115	4	330
ФР	25	ж	ET	2019	CALR+	12	150mg	131	9	1263	136	4	512
СМ	19	ж	ET	2022	JAK2+	splenectomy	150mg	132	6.5	632	126	6.9	577
БН	23	м	ET	2022	JAK2+	11	250mg	155	11	1213	135	8	300
ЗК	34	м	ET	2021	JAK2+	splenectomy	150mg	101	23	2699	131	13	727
MJ	25	ж	ET	2016	JAK2+	11	100mg	140	7	835	138	4	290

Table 1. Main characteristics of patients treated with ropeginterferon alfa-2b.



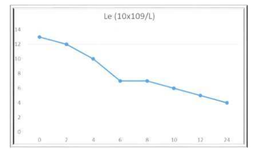


Figure 1A

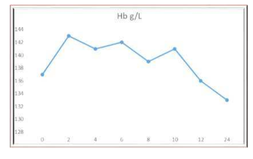


Figure 2A

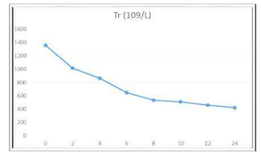


Figure 1B

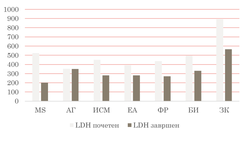


Figure 2B

Figure 1A:WBC count dynamics from treatment start over 24 months follow-up.
Figure 1B: Platelet count (Plt) dynamics from treatment start over 24 months follow-up.

Figure 2A: Hemoglobin (Hb) count dynamics from treatment start over 24 months follow-up.
Figure 2B: Values of Lactate Dehydrogenase before and after treatment start with ropeginterferon alfa-2b.

Conclusions

Our experience with ropeginterferon alfa-2b further confirms its effectiveness and supports the necessity to expand its use in the treatment of young high risk patients with ET taking into consideration that IFN is the only available drug with low teratogenic effect with tolerable safety profile.

References

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