

The Efficacy of JAK 1/2 Inhibition to treat Polycythemia Vera



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Background

- Polycythemia Vera (PV) is a myeloproliferative neoplasm which causes an excess production of blood
- Hydroxyurea, an antineoplastic, is administered to many patients with PV
- Janus Kinase (JAK) inhibitors are immunosuppressants: ruxolitinib (RXB), tofacitinib, and upadacitini
- JAK 1 is responsible for protein coding while JAK 2 promotes proliferation of cells
- JAK 1/2 is usually used for joint pain and swelling in patients with rheumatoid arthritis

Question

How effective is JAK 1/2 Inhibition in treating Polycythemia Vera?

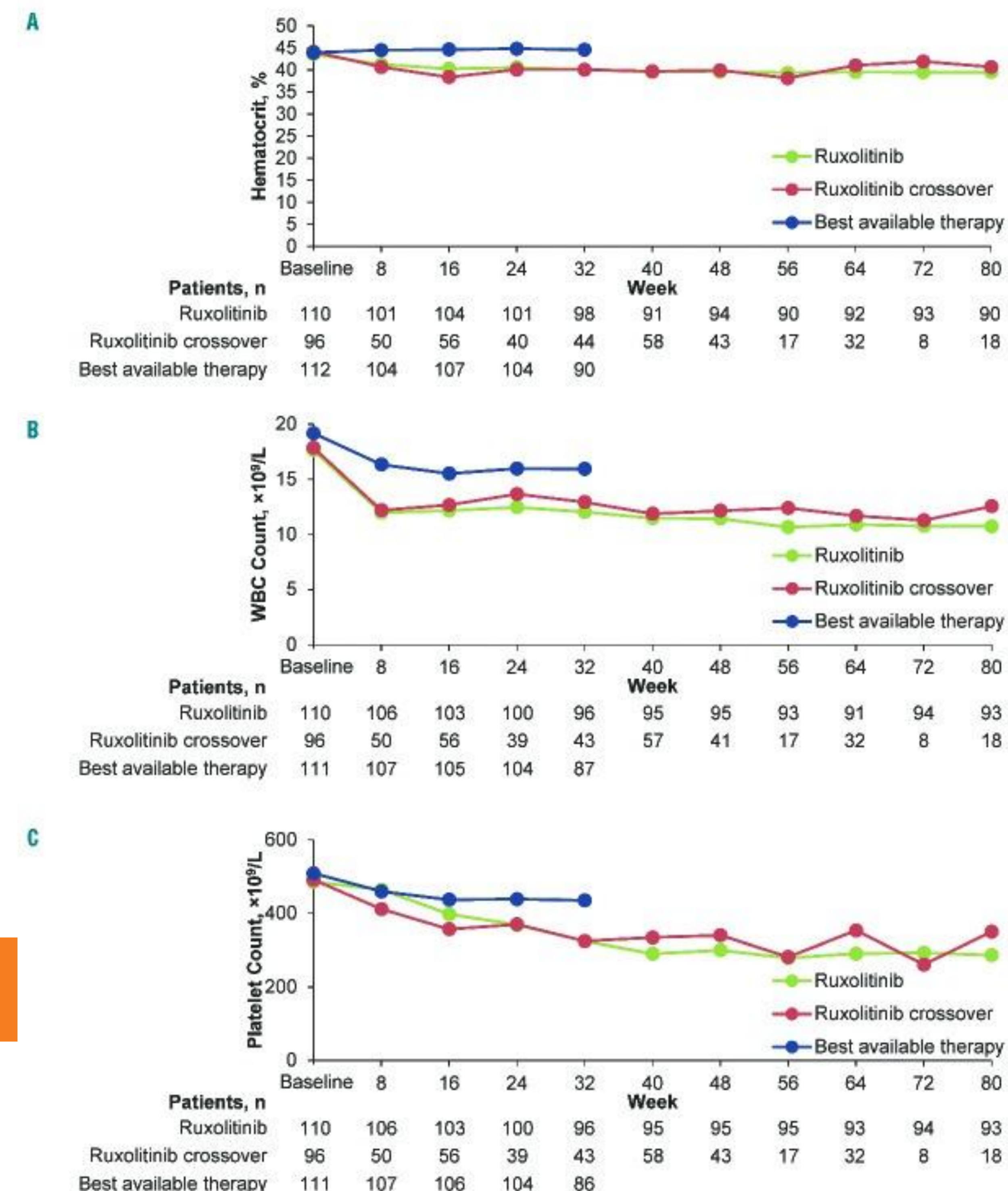
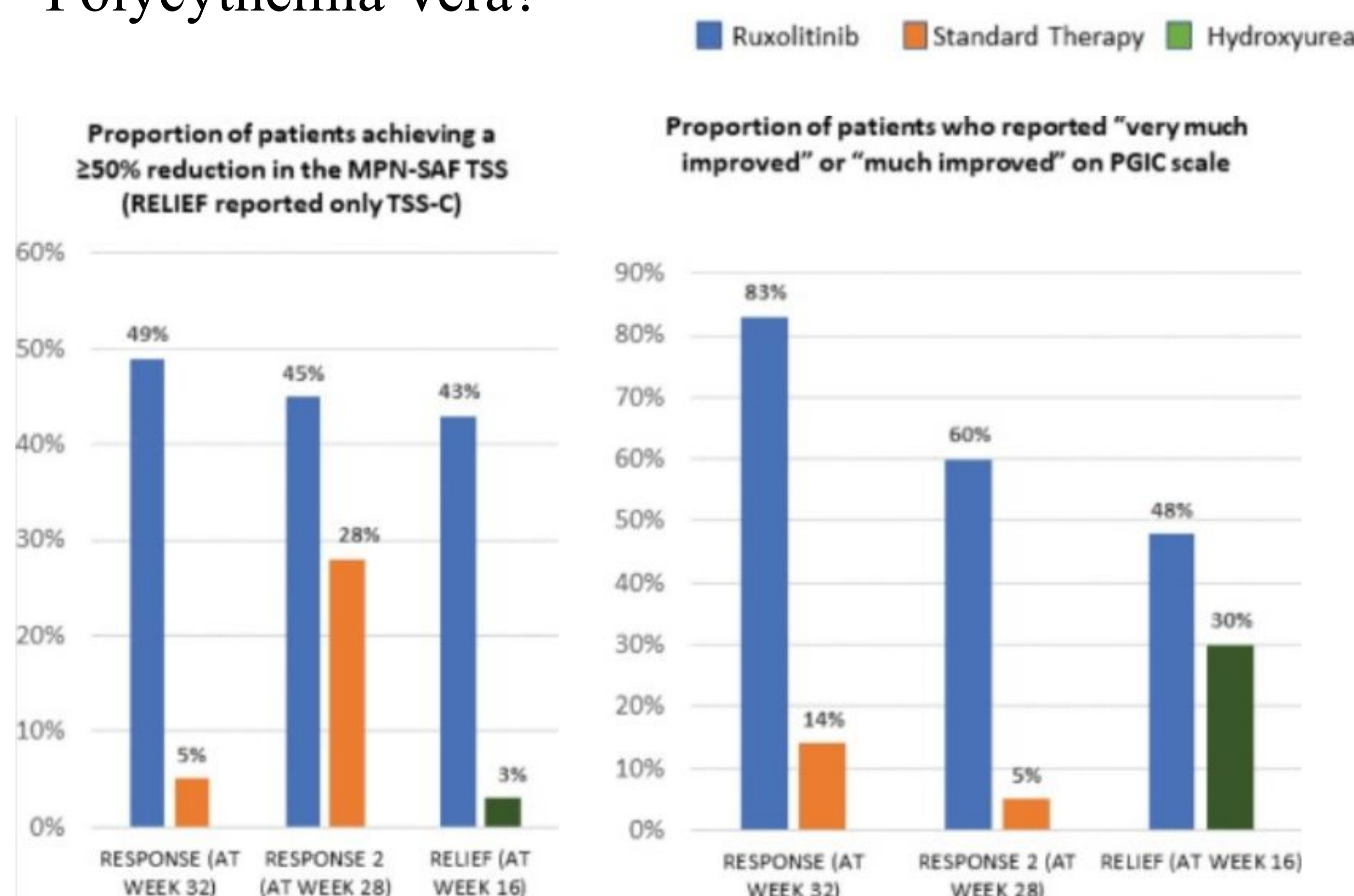


Figure 1: Comparing ruxolitinib with standard therapy vs hydroxyurea alone

Figure 2: Mean hematocrit levels (A), white blood cell counts (B), and platelet counts (C) over time

Results

- RXB has been most tested with PV, and has shown a significant improvement, with a P-value of <0.0001 in some trials, in PV symptoms.
- In combination with the drug Interferon, there has been an improvement in cell counts, bone marrow, and fibrosis
- Metabolic effects of RXB are positive

CONCLUSION

- JAK inhibition is a promising a replacement for hydroxyurea and further improves PV symptoms in conjunction with other drugs

Future Direction

- Testing other JAK inhibitors such as Methotrexate for PV treatment
- COVID treatment with JAK inhibition

Citations

1: Cingam, S., Flatow-Trujillo, L., Andritsos, L. A., & Arana Yi, C. (2019). Ruxolitinib In The Treatment Of Polycythemia Vera: <https://doi.org/10.2147/JBM.S177692>

2: Mesa, R., Verstovsek, S., Kiladjan, J. J. (2016). <https://doi.org/10.1111/ejh.12707>