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Recurrent Postoperative Hemorrhage After Mohs Reconstruction in a Patient on Ruxolitinib

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A 61-year-old male with a history of CSF3R+ atypical chronic myelogenous leukemia (aCML) on ruxolitinib and multiple skin cancers presented for nasal reconstruction after Mohs micrographic surgery (MMS) of a left nasal alar basal cell carcinoma. He was estimated to have a 10-month life expectancy without a stem cell transplant (SCT), the only known curative option for aCML. To proceed with SCT, the patient required medical optimization, which included excision of all skin cancers. As a result of his leukemia and ruxolitinib, he was persistently anemic and thrombocytopenic requiring periodic transfusions. Preoperative hematologic parameters were discussed with his hematology team (hemoglobin >7 g/dL, platelets $>75 \times 10^9$/L), and it was recommended that the patient should continue ruxolitinib perioperatively.

Hematologic parameters were optimized prior to surgery with blood transfusions. Mohs micrographic surgery was performed with a final defect size of $2.1 \times 1.9 \times 0.9$ cm. The defect was reconstructed with a single-stage nasolabial island flap and composite ear cartilage graft. Postoperatively, the patient bled from the surgical site requiring multiple bedside hematoma evacuations, blood transfusions, and wound explorations in the operating room on postoperative days (POD) 0, 3, and 7. Hematology was re-consulted on POD2, and ruxolitinib-induced platelet dysfunction was suspected and confirmed with PFA-100 testing. Ruxolitinib was held and intravenous tranexamic acid (TXA) was recommended. Ruxolitinib was then restarted on POD5. This was complicated by hematoma reaccumulation, which resulted in loss of the pedicled reconstruction. Ruxolitinib was held throughout the remainder of the hospitalization, and TXA 1g twice daily was administered for 3 days without further bleeding complications. The patient was discharged on POD11 and returned 3 days later for wound washout and closure. Ruxolitinib was restarted 7 days after final wound closure. On follow-up 14 days later, the patient was healing well and had no further bleeding complications.

Discussion

Ruxolitinib (Jakafi®) is a Janus kinase (JAK) inhibitor that is predominately used to treat polycythemia vera (PV) and myelofibrosis but has been shown to benefit patients with aCML with a CSF3R mutation. The drug also demonstrates antitumor effects in head and neck squamous cell carcinoma (HNSSC), and its use is being investigated in the neoadjuvant setting.[1] Therefore, it is important that head and neck oncologic and reconstructive surgeons are aware of the potential effects of ruxolitinib. Anemia and thrombocytopenia are common side effects, though ruxolitinib is safe in patients with platelet counts between 50 and 100×10^9/L.[2] The National Comprehensive Cancer Network recommends continuing ruxolitinib preoperatively in patients with PV; however, cases of postoperative hemorrhage requiring operative intervention have been reported in PV patients undergoing head and neck free flap reconstruction while on ruxolitinib.[3]

Tranexamic acid is an antifibrinolytic agent that can be used to prevent or mitigate bleeding complications, and both oral and intravenous formulations have been shown to be useful for thrombocytopenic or coagulopathic patients with hematologic malignancies. Theoretically, TXA may increase the risk of thrombosis, though studies have not demonstrated an increase in thrombotic events.[4]

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Subcutaneous TXA may also reduce bleeding complications in high-risk patients undergoing interpolated flap reconstruction for nasal defects after MMS.[5]

This case report highlights the potential perioperative complications while on ruxolitinib. As the indications for JAK inhibitors increase, surgeons should exercise caution until the current preoperative guidelines are optimized. Collaboration between surgical and medical teams is essential in the perioperative period. Hematologic parameters must be discussed as well as the risks and benefits of discontinuing ruxolitinib. We also stress the importance of evaluating for ruxolitinib-induced platelet dysfunction, and the potential use of TXA in patients with recurrent bleeding complications.

Author Contributions

David P. Grande, conceptualization, writing—original draft preparation; **Samuel R. Auger**, writing—review and editing; **Diana Bolotin**, writing—review and editing; **Joseph B. Meleca**, supervision, conceptualization, writing—review and editing.

Disclosures

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