blood® Editorial

Introduction to a How I Treat series on hematologic complications in pregnancy

Hematologic problems encountered during pregnancy are not uncommon and typically require comanagement by high-risk obstetrics, hematology, obstetric anesthesiology, and other subspecialties. In 2020, *Blood* published a How I Treat series on hematologic complications in pregnancy that addressed the following topics: lymphoma,[1] thrombotic thrombocytopenic purpura,[2] venous thromboembolism,[3] and carriers of hemophilia and patients with von Willebrand disease.[4] This How I Treat series expands on our earlier How I Treat series and covers the following 4 additional hematologic topics encountered during pregnancy.

- Annemarie E. Fogerty and David J. Kuter, "How I treat thrombocytopenia in pregnancy"
- D. Ware Branch and Ming Y. Lim, "How I diagnose and treat antiphospholipid syndrome in pregnancy"
- Andra H. James and John Joseph Strouse, "How I treat sickle cell disease in pregnancy"
- Susan Robinson, Monica Ragheb, and Claire Harrison, "How I treat myeloproliferative neoplasms in pregnancy"

Thrombocytopenia is a common hematologic problem during pregnancy, affecting approximately 10% of all pregnancies. Fogerty and Kuter review the different causes of thrombocytopenia during pregnancy, identifying diagnostic clues that help distinguish disorders that can be managed by observation alone from those that require urgent therapeutic intervention. Gestational thrombocytopenia accounts for the majority of patients with a decreased platelet count during pregnancy, typically occurring late in the pregnancy with most patients having a platelet count above 70 000/μL that recovers spontaneously after delivery. In contrast, immune thrombocytopenia may occur at any time during pregnancy, and treatment to raise the platelet count is recommended if it falls below 20 000/μL. Thrombotic microangiopathies may be pregnancy specific, including preeclampsia, HELLP syndrome (hemolysis, elevated liver enzymes, and low platelets), and acute fatty liver disease of pregnancy, or not specific to pregnancy, including thrombotic thrombocytopenic purpura, complement-mediated hemolytic uremic syndrome, and catastrophic antiphospholipid antibody syndrome. The authors provide a general approach to identify the correct disorder with several case presentations.

Antiphospholipid syndrome (APS) is a rare autoimmune disorder characterized by thrombotic complications, pregnancy morbidity, and various nonthrombotic manifestations, in the setting of persistently positive test results for antiphospholipid antibodies. Branch and Lim provide their approach to the diagnosis and management of patients with APS during pregnancy in the context of the recently revised classification criteria.[5] Obstetric clinical manifestations of APS include recurrent pregnancy loss, fetal death, preeclampsia, placental insufficiency, and HELLP syndrome, but none of these adverse events are specific for APS. The authors also address how they approach patients with laboratory results for anticardiolipin or anti-β_2-glycoprotein I antibody levels that are above the upper end of the reference range for the clinical laboratory but below the cutoff for moderate to high positive test results recommended by the new classification criteria (the patient with a "low-positive" result). Catastrophic APS is a very rare manifestation of APS that may develop during pregnancy or postpartum, and it can occur in patients without a prior history of APS.

Sickle cell disease is most commonly associated with a chronic hemolytic anemia and recurrent vaso-occlusive crises, but the pathophysiologic process may affect any organ of the body. James and Strouse review the maternal and fetal complications that can develop during pregnancy in this patient population, noting that many of the normal physiologic processes that occur during pregnancy can lead to exacerbations and complications in patients with sickle cell disease. Using several case presentations, they address topics important to the management of patients with sickle cell disease, spanning the initial discussions during preconception counseling, covering the course of the pregnancy, and culminating with delivery and important considerations for the postpartum setting. Hydroxyurea, an important disease-modifying therapy for patients with sickle cell disease, carries a potential risk for adverse fetal outcomes and is typically discontinued during pregnancy. However, this decision needs to be balanced against the clinical benefits for the mother associated with continuing hydroxyurea. Management of vaso-occlusive crises and prevention of thrombotic complications during pregnancy are 2 additional topics that are addressed in this timely review.

The BCR-Abl1$^-$ myeloproliferative neoplasms (MPNs) include essential thrombocythemia (ET), polycythemia vera (PV), and primary myelofibrosis. Robinson et al note that although these disorders occur more commonly in older adults, they are being diagnosed with an increasing frequency in younger individuals, including a second peak for ET in women of reproductive age. The authors review their approach to the management of pregnancy in patients with MPN and demonstrate how they apply risk assessment to determine the optimal therapeutic approach. As the risk for adverse outcomes increases, the

Submitted 29 December 2023; accepted 29 December 2023. https://doi.org/10.1182/blood.2023020730.

authors address who would benefit from aspirin alone (including what dose should be used), who would need anticoagulant therapy (typically a low molecular weight heparin), and who would benefit from the addition of cytoreductive therapies. The authors also note areas to watch for future developments, including the use of *JAK2* molecular monitoring during pregnancy and the desire to identify and develop additional therapies that can be safely used during pregnancy.

These How I Treat articles document the critical role that clinical hematologists have in the diagnosis and management of a variety of hematologic disorders that occur during pregnancy.

Thomas L. Ortel
Associate Editor, *Blood*

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