ANTICOAGULANTS AND PREGNANCY

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BACKGROUND

Pregnancy, a hypercoagulable state, is associated with an increased risk of VTE, particularly during late pregnancy and the postpartum period, and may necessitate anticoagulation for both prevention and treatment of thrombotic events.
The incidence of VTE during pregnancy is approximately one to three per 1,000 deliveries. The risk is increased because, during pregnancy, the balance is incredibly tipped toward a procoagulant state - both because of increased levels of natural procoagulants and decreased levels of natural anticoagulants.
Anticoagulant management during pregnancy presents unique clinical challenges because maternal benefit must be carefully balanced against potential fetal risk. Many anticoagulants commonly used either cross the placenta or lack sufficient safety data, limiting available treatment options. Dosing strategies and peripartum management require careful consideration to minimize bleeding risk and maintaining protection against Because of physiologic changes during pregnancy, the VTE risk is approximately five to 10 times higher than during non-pregnancy, and the postpartum risk is 15 to 20 times higher. Safely and effectively balancing the risks and benefits of anticoagulation in pregnant women is challenging, because of the dosing complexities and the limited data available to guide treatment decisions..

OBJECTIVES

1. Define the anticoagulants are preferred during pregnancy for prevention of maternal thrombosis and fetal safety.
2. Summarize the efficacy and safety of LMWH during pregnancy.
3. Evaluate dosing strategies for VTE prevention in women with prior VTE (low-dose vs intermediate-dose LMWH) using randomized trial data.
4. Summarize research on unintentional DOAC exposure in pregnancy.
5. Clarify peripartum management principles.

During pregnancy, women experience progesterone-induced venodilation, which promotes venous stasis, venous compression by the uterus, and compression of the left iliac vein by the right iliac artery. Pregnancy causes changes in the hemostatic system that create a hypercoagulable state; this includes decreased protein S activity, increased protein C resistance, and other factors that lead to increased thrombin production.

METHODS

A literature review focusing on anticoagulant use during pregnancy and the postpartum period was conducted.

- A systematic review evaluating the safety and efficacy of LMWH in pregnancy
- The Highlow randomized trial comparing low-dose and intermediate-dose LMWH in women with prior VTE
- Retrospective cohort studies examining unintentional DOAC exposure during pregnancy
- Major clinical guidelines addressing anticoagulant selection and peripartum management

Outcomes assessed included maternal thrombotic events, bleeding complications, fetal outcomes, and peripartum management considerations.

RESULTS

LMWH) and UFH were consistently identified as the preferred anticoagulants during pregnancy due to their inability to cross the placenta and their well-established maternal safety profiles. In contrast, warfarin was avoided because of documented teratogenicity and fetal bleeding risk. DOACs were not recommended owing to limited safety data and concerns regarding placental transfer. See Fig. 1 for a comparative summary of the anticoagulant use in pregnancy.

Anticoagulant Use in Pregnancy: Comparative Summary

Anticoagulant	Suitable in Pregnancy	Crosses Placenta	Key Notes Relevant to Study
Low Molecular Weight Heparin (LMWH)	Yes (Preferred)	No	• First-line anticoagulant in pregnancy; • Does not cross the placenta; • Strong maternal safety profile
Unfractionated Heparin (UFH)	Yes	No	• Safe in pregnancy; • Does not cross the placenta; • Useful near delivery
Warfarin	No (Avoided)	Yes	• Teratogenic & fetal bleeding risk; • Fetal warfarin syndrome
Direct Oral Anticoagulants (DOACs)	Not Recommended	Likely / Uncertain	• Limited safety data in pregnancy; • Concerns about placental transfer

Figure 1: Anticoagulant use in pregnancy

A large systematic review encompassing 64 studies and 2,777 pregnancies demonstrated that LMWH is both safe and effective during pregnancy, with no maternal deaths reported and low thrombotic event rates (venous thrombosis ~0.86%, arterial thrombosis ~0.50%).

RESULTS CONT.

In women with a prior history of VTE, the Highlow randomized trial (n=1,110) found no reduction in recurrent VTE with intermediate-dose LMWH compared with fixed low-dose prophylaxis.

This trial supports low-dose LMWH as the standard approach for most patients, with individualized escalation reserved only for select high-risk phenotypes.

Evidence regarding DOAC exposure is limited to unintentional use; a retrospective cohort of 614 exposed pregnancies reported a fetal abnormality rate of approximately 6%, with major anomalies potentially related in ~4%. See Figure 2 for evidence based use of anticoagulants use in pregnancy.

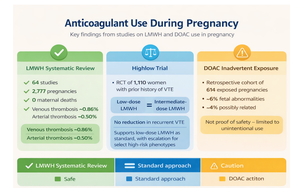

Figure 2: Evidence summary for anticoagulant use

Although these findings do not establish safety, they support counseling against pregnancy termination based solely on early inadvertent exposure. Across major clinical guidelines, pregnancy and the postpartum period remain associated with a substantially increased VTE risk, with recommendations emphasizing continuation of anticoagulation through pregnancy and for at least six weeks postpartum, using planned peripartum holds and timely postpartum resumption once hemostasis is secured.

CONCLUSIONS

1. LMWH is the preferred anticoagulant in pregnancy and postpartum period due to strong safety and efficacy.
2. In women with prior VTE, evidence shows that intermediate-dose LMWH does not reduce recurrences compared with low-dose LMWH.
3. Warfarin is generally avoided because of teratogenicity and fetal bleeding risk.
4. DOACs are not recommended for use in pregnancy.
5. The postpartum period carries sustained VTE risk, and when anticoagulation is indicated, therapy should continue for at least six weeks postpartum.