

Why low molecular weight heparin prevents most severe pregnancy complications?

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A recent article published in the journal of Obstetrics and Gynecology presented the results of a beautiful experiment, which has added a new dimension to the benefits of anticoagulation in pregnancy. Historically, patients with recurrent pregnancy loss (miscarriage), preeclampsia, intrauterine growth restriction (IUGR), and fetal demise have been treated with various forms of anticoagulation including aspirin, unfractionated heparin and fractionated heparin, known as low molecular weight heparin.

Unfractionated heparin has been the first heparin in the market. The use of heparin has been associated with heparin-induced thrombocytopenia (severe reduction of the number of platelets), which can be fatal. In addition, due to the short half-life, heparin needs to be administered with continuous intravenous infusion for best results.

The development of the newer low molecular weight heparins (LMWH) gave physicians a better weapon against thrombosis. LMWH lasts longer and in most cases, a single subcutaneous injection is sufficient to prevent abnormal clotting in patients who are at risk for such thrombotic episodes.

Pregnancy is a pro-thrombotic condition; the coagulation system of a pregnant woman is much more likely to be subject to abnormal clotting than when she is not pregnant. This effect can magnify any underlying prothrombotic condition that the patient may have and thus put her at risk for thrombotic complications that can affect her health as well as the placenta. **Placenta thrombosis is a terrible complication leading to preterm birth, IUGR, pre-eclampsia, recurrent pregnancy loss, fetal demise, neonatal death and cerebral palsy.**

Patients with anti-phospholipid syndrome, an immune system disturbance, and patients with genetic and familial thrombotic disorders are more likely to have the above-mentioned complications. **For the same reason, women who have experienced any of these pregnancy complications are much more likely to die from a cardiovascular cause after menopause than women who never had any pregnancy complications.** The reason for such increased mortality is the underlying pro-thrombotic conditions that caused the pregnancy complications that kill the mother later in her life. If such patients had known that they suffered from thrombophilia when they were young, they could have been treated properly and prevent their premature death.

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The latest research revealed that in addition to the anticoagulation benefits that LMWH exert on the placenta to prevent placental thrombosis, LMWH exert a direct stimulatory effect in the process of angiogenesis (the creation of new blood vessels). Considering that the placenta is a huge bunch of blood vessels and that placental clotting leads to significant loss of blood vessels, it is a no brainer that LMWH has been able to prevent most of the pregnancy related complications.

The use of heparins in general remains a controversial subject due to the lack of understanding and the poor design of studies, which led to controversial results. Proper monitoring of the placenta from the beginning of the pregnancy and appropriate anticoagulation treatment with the earliest signs of placental thrombosis has enabled us to reduce and almost eliminate the majority of the previously mentioned severe pregnancy complications.

Over the years in my practice it became clear from pathology examinations of the placentas of our patients that placentas of patients treated with LMWH are youthful in appearance with new chorionic blood vessels. These are the blood vessels that help the baby acquire all the essential nutrients and oxygen for a healthy development. This truly intelligent research was music to my ears because it gave life to my suspicions over the years that Lovenox (LMWH) offered to our placentas more than just anticoagulation protection. I hope that after this study, more obstetricians will become more open to the use of LMWH in the management of patients with placental problems and thus reduce preventable losses and suffering.