Pregnancy Outcomes Comparing Low Molecular Weight Heparin vs. Unfractionated Heparin in Treating Thrombotic Conditions in Pregnancy

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1. Introduction

Treating and preventing thrombotic conditions in pregnancy has become a debatable medical question. Venous thromboembolism (VTE) continues to be an important cause of maternal morbidity [1]. For many years unfractionated heparin (UFH) has been the drug of choice for treating these conditions. However, over the last few years low molecular weight heparins (LMWH) have been gaining favor due to several advantages over UFH. Some of these advantages include once daily dosing, decreased risk of heparin-induced thrombocytopenia and osteoporosis, and fewer allergic skin reactions [2]. It is difficult to find a large number of pregnant patients willing to participate in a randomized control study comparing UFH to LMWH. For this reason it is important to summarize the results of all well conducted and reliable studies comparing LMWH with UFH to see if differences in pregnancy outcomes exist and to determine which anti-thrombotic therapy is the safest and most effective for both mother and fetus.

2. Experiment

A literature review of articles from the Medline database from 1983-current literature was completed. This search was conducted using the following mesh terms: heparin, clinical trials, pregnancy outcomes, venous thrombosis, low molecular weight heparin, and pregnancy. The sources were evaluated to ensure they were from accredited journals containing peer-reviewed articles. All articles containing information regarding LMWH and pregnancy outcomes are included in this study.

A total of twenty-one articles were reviewed. Information from thirteen articles was used to determine whether differences in pregnancy outcomes exist between the two types of heparin. The information collected included the number of pregnancies involved, the type of heparin administered, the percentage of successful pregnancies, and adverse events for each type of heparin.

3. Results

The twenty-one articles reviewed included eight randomized clinical trials, three non-randomized clinical trials, three systematic reviews, four prospective cohort studies, one case study, and two literature reviews. Of these twenty-one articles, the thirteen articles reviewed for the comparison of LMWH vs. UFH included four randomized clinical trials, one non-randomized clinical trial, three systematic reviews, four prospective cohort studies, and one case study.

These studies revealed that LMWH is as safe and effective in treating thrombotic conditions during pregnancy as UFH. The following table summarizes the information obtained from the articles reviewed (see Table 1).

Discussion After reviewing the literature, it was found that LMWH has been used for the treatment of a variety of thrombotic conditions including women with recurrent pregnancy loss (RPL), anti-phospholipid syndrome (APS), Factor V Leiden (FVL) mutation, deep vein thrombosis (DVT), and familial thrombophilias. LMWH has been found to be safe and effective for all of these conditions, with the added benefits of fewer bleeding episodes and other adverse pregnancy outcomes.

Table: 1
Successful Pregnancies and Adverse Outcomes of LMWH vs. UFH

Type of Heparin Administered	Total # of Pregnancies Involved	Successful Pregnancies*	Adverse Outcomes**
LMWH	3765 (97%)	3099 (82.3%)	666 **(17.7 %)**
UFH	118 (3%)	66 (55.9%)	52 (44.1%)

*A successful pregnancy was defined as a pregnancy that produced a healthy, full-term newborn with no adverse event associated with heparin therapy.
** Adverse outcomes include pulmonary embolism, VTE, significant bleeding complications, antenatal bleeding, wound hematomas, skin reactions, osteoporitic fractures, thrombosis, miscarriage, preterm infants, and fetal malformations. [1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14]

4. Conclusions

LMWH is as safe and effective for the treatment of thrombotic conditions as UFH with the added benefit of fewer side effects and should be considered as the drug of choice for treatment. Many of the clinical studies already completed regarding LMWH conclude that further randomized clinical trials with larger sample sizes are needed before LMWH can be considered the drug of choice for treatment of thrombosis in pregnancy.

5. References

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