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Case Report

Postpartum prophylaxis of venous thromboembolism with anticoagulation: A case report

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الملخص

على الرغم من أن مراحل الحمل وما بعد الولادة تنطوي على مخاطر عالية بشكل ملحوظ للإصابة بالجلطات الدموية الوريدية، إلا أن هناك حاجة إلى تطبيق نهج حذر أثناء بدء العلاج بمضادات التخثر العلاجية والوقائية. إن مزايا استخدام الهيبارين كوقاية من التخثر في مرضى ما بعد الولادة مبالغ فيها ويتم التغاضي عن مخاطره بشكل عام. الهدف من هذه الدراسة هو الإبلاغ عن استخدام غير مناسب لمضادات التخثر في مريضة بعد ولادتها. تم جمع البيانات في هذه الدراسة بناء على عرض حالة لأنثى سليمة صحيا، تبلغ من العمر ٣١ عاما عقب ولادة طبيعية عبر المهبل زارت المستشفى مصابة بطفح جلدي. كانت زيارة المريضة بسبب ظهور بثور صغيرة مثيرة للحكة في موقع حقن الإينوكساپارين منذ ثلاثة أيام، ماعدا ذلك فهي سليمة. كشف فحص وزنها عن سمنة من الدرجة الثانية. وأظهر فحص مقياس نارانجو احتمالية أنوكساپارين هو سبب تفاعل فرط الحساسية. قرر فريق الرعاية السريرية وقف الهيبارين ولم يظهر فحص المتابعة أي علامة على وجود جلطات دموية وريدية. على الرغم من أن عدد من النساء الحوامل وبعد الولادة قد يحتجن إلى الوقاية من الجلطات الدموية الوريدية، إلا أن منع تخثر الدم الروتيني لهذه الفئة من المرضى غير مدعوم. يعتبر وزن المخاطر مقابل الفائدة أمرا ضروريا لعرقلة أي تفاعل دوائي ضار قد يحدث مع هذه الفئة من الأدوية.

الكلمات المفتاحية: مضاد للتخثر؛ بعد الولادة؛ الوقاية؛ مدينة الرياض؛ تقييم المخاطر

Abstract

Although there is a remarkably high risk of venous thromboembolism (VTE) during pregnancy and postpartum, a cautious approach is needed while initiating therapeutic and prophylactic anticoagulant therapy. The merits of heparin for thromboprophylaxis in postpartum patients are exaggerated, and its risk is generally overlooked. This study aimed to report the inappropriate use of anticoagulants in postpartum patients. The patient in this report was a 31-year-old healthy woman who had had a normal spontaneous vaginal delivery and visited the hospital a 3-day history of small itchy blisters at the enoxaparin injection sites. An examination revealed class II obesity. The Naranjo Scale assessment showed the possibility of an enoxaparin-induced hypersensitivity reaction. The clinical care team decided to discontinue the heparin. A follow-up examination did not show any signs of VTE. Although many pregnant and postnatal women might need VTE prophylaxis, routine anticoagulation for such a population is not essential. Clinicians should weigh the risks versus benefits to avoid any adverse drug reactions that may occur with this class of medication.

Keywords: Anticoagulant; Postpartum; Prophylaxis; Risk assessment; Riyadh

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Introduction

Pregnancy and the puerperium carry a markedly increased risk of venous thromboembolism (VTE)[1] with an estimated risk of 1–2 per 1000 pregnancies. A personal history of thrombosis is the most important individual risk factor for VTE.[2] Approximately 20%–50% of women who experience VTE during pregnancy have a history of thrombophilia.[3] Generally, patients are categorised into pregnant women with thrombophilia and previous VTE; pregnant women with thrombophilia, no previous VTE, but a family history of VTE; and pregnant women with thrombophilia, no previous VTE, and no family history of VTE. Hence, anticoagulants are inevitably used to control the risk of VTE-induced complications. However, there is a need to regulate their use based on the risk assessment of patients both during pregnancy and postpartum. The American College of Obstetrics and Gynaecology, the Royal College of Obstetrics and Gynaecology, and the American College of Chest Physicians have recommended the evaluation of VTE risk during pregnancy to initiate prophylactic or therapeutic doses of the anticoagulant.

Unfractionated heparin (UFH) and low-molecular-weight heparin (LMWH) are recommended for pregnant women who require anticoagulation. Because they do not cross the placenta, they are considered safe.[4] UFH is a naturally occurring glycosaminoglycan composed of a heterogeneous mixture of polysaccharides. It exerts its therapeutic action by interfering with the clotting factors XIIa, XIa, Xa, IXa, and IIa. LMWHs are generated from UFH by chemical or enzymatic depolymerisation to produce a smaller anticoagulant that is more specific to factor Xa.[5,6] LMWH is preferred over UFH because it has a more predictable pharmacokinetic profile, lower incidence of adverse drug reactions, greater efficacy, and better patient compliance.[4,7] However, nursing mothers can use LMWH, UFH, or warfarin, as these agents have been proven to be safe in breastfed infants.[4]

There are complications associated with the administration of heparin, including bleeding, osteoporosis, and rarely, hypersensitivity reactions. Additionally, heparin may cause all types of allergic reactions, such as heparin-induced thrombocytopenia, immediate anaphylactic reactions, and delayed hypersensitivity skin reactions.[8] Because of the documented cross-reactivity between LMWHs, switching between LMWHs is discouraged if a patient has a history of a confirmed hypersensitivity reaction to one of the LMWHs. Moreover, its cross-reactivity with UFH has been reported in 50% of cases. However, fondaparinux, a fully synthetic pentasaccharide, is associated with a lower incidence of cross-reactivity.[9] Therefore, danaparoid or fondaparinux (if danaparoid is not available) is a safer alternative in the antepartum period when hypersensitivity to heparin is reported.[4] We report a case of a woman who received postpartum prophylaxis with anticoagulants and developed a delayed-type hypersensitivity reaction.

Case presentation

Seven days after a normal spontaneous vaginal delivery (NSVD) (parity 5), a 31-year-old healthy woman presented to the emergency department with a skin rash persisting for 3 days. Her vital signs on the day of presentation were as follows: pulse rate, 92; respiratory rate, 20; blood pressure, 127/81 mmHg; pain score, 2/10; and oxygen saturation, 99%. She had no cough, generalised body itching, or shortness of breath. The patient had been administered an LMWH (enoxaparin 40 mg once daily) after delivery for thromboprophylaxis. The rash was 7 × 7 cm on both upper arms with small itchy blisters at the enoxaparin injection sites. The patient reported an allergy to fig. Her body mass index (BMI) was 36.2 kg/m^2 (categorised as class II obesity). While the medical team attempted to identify an alternative to enoxaparin, the patient refused to wait for the medical decision and insisted on signing the refusal form, although she was informed of the consequences. According to the Naranjo Scale (Adverse Drug Reaction Probability Scale), enoxaparin being the cause of the hypersensitivity reaction was scored as probable. In addition, the reaction was moderate in severity according to Hartwig's severity assessment scale (level of adverse reaction).

After reviewing her case with other members of the health care team and the clinical pharmacist, the medical team realised that VTE prophylaxis was not needed for her condition. The patient's risk of thrombosis was low, considering her unremarkable medical history. Finally, the patient was allowed to go home without anticoagulant therapy. The patient was followed up in the clinic when she visited for her regular postnatal care visit, with no signs of VTE or allergic skin rashes. Only oral consent was obtained from the patient and her spouse to present the case in this study.

Discussion

The benefit of starting pharmacologic VTE prophylaxis in the antepartum and postpartum periods should outweigh the risk of bleeding and other foetal complications. Delayed-type hypersensitivity reaction (DTHR) is one of the most common types of heparin hypersensitivity, and it usually occurs 24–72 h after exposure. It is characterised by itchy eczema and plaques at the injection sites.[8,10] The mechanism underlying this reaction is theoretically explained by the formation of antibodies against heparin when it binds to proteins, forming a complex antigen. The risk factors for the development of DTHR to heparins are older age, female sex, pregnancy, obesity, and prolonged exposure to heparins.[10] In the case presented here, a DTHR of the skin developed from enoxaparin 7 days postpartum in an obese female patient who was otherwise healthy. She had a localised rash on her upper arms around the enoxaparin injection sites with small irritated blisters. In this case, thromboprophylaxis was not required because of her unremarkable medical history. The decision of a gynaecologist to prescribe enoxaparin is routine in clinical practice based on a BMI $\geq$30 kg/m^2 and parity $\geq$3.[11] Obese postpartum patients are generally given enoxaparin regardless of delivery mode.[12] However, enoxaparin is administered to patients without any reference to body weight in some clinical settings starting from the later age of pregnancy up to 6 weeks postpartum.[13] In contrast, one study noted haemorrhage due to enoxaparin as an infrequent complication in homeostatically stable women following vaginal delivery.[14] It was noted in the present case that the risk of VTE

prophylaxis-induced complications outweighed any benefit. Therefore, the recommendation of the health care team was to carefully assess the risk of VTE and determine the appropriateness of administering pharmacological VTE prophylaxis before prescribing them to avoid complications.

Conclusion

Although many pregnant and postnatal women might need VTE prophylaxis, routine anticoagulation for this population is not supported. Our patient had a DTHR due to unnecessary exposure to enoxaparin. Underestimating the harms of anticoagulant therapy and overestimating its benefits constitute inaccurate expectations of medical interventions that could profoundly influence decision-making and the standard of care patients receive. Weighing risk versus benefit is essential to prevent any adverse drug reactions that may occur with this class of medication.

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Conflict of interest

The authors have no conflict of interest to declare.

Ethical approval and patient consent

The authors certify that all required patient consent forms have been received. The patient has given his permission for relevant information to be published in the journal. His identity will be hidden, however, the anonymity cannot be guaranteed.

Consent

Consent was obtained from the patient and her spouse.

Authors' contributions

YM was responsible for gathering data and developing an initial draft of the manuscript. RB and KA participated in data curation and analysis, SA and RA were responsible for data interpretation and manuscript writing, while SMBA was responsible for conceptualisation, design, analysis, and interpretation of the results as well as a final review of the manuscript. All authors critically reviewed and approved the final draft and are responsible for the content and similarity index of the manuscript.

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