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# Spinal Anaesthesia for Caesarean Delivery in a Parturient with Partial Factor XI Deficiency

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Dear Editor,

We read the case report on the management of combined spinal epidural (CSE) anaesthesia performed for total hip replacement in a 59-year-old patient having Factor XI (FXI) deficiency with great interest by Adibelli et al (1). Based on the presentation of CSE anaesthesia after infusion of 6 units (U) of fresh frozen plasma (FFP) in the patient having preoperative long aPTT (77 s) and low FXI activity (9%), we aimed to present our anesthetic management in a case with FXI deficiency undergoing cesarean section (CS) by discussing the existing literature.

After obtaining the consent of the 31-year-old (70 kg, 155 cm) parturient who was in the 40th gestational week and had FXI deficiency (FXI activity 33%), spinal anaesthesia was planned for repeat CS. Because aPPT was found to be 32 s in the blood samples collected for determining factor XI and aPTT after 2 units of FFP transfusion, spinal anaesthesia was performed at the L3–4 interspaces in the sitting position using 9 mg hyperbaric bupivacaine+10 μg fentanyl+150 μg morphine with 27-gauge Quincke spinal needle. When sensorial blockade reached T4 after 5 min, the onset of surgery was allowed. With approximately 1000 mL of bleeding, CS ended in half an hour without any complication. Since the newborn's weight was 2 kg, the patient was discharged on the 5th postoperative day.

Although the incidence of FXI deficiency is 1:1000000, its frequency in obstetrics is unknown. In review of 13 pregnant women with FXI deficiency during labor and delivery, 9 parturients received epidural analgesia for vaginal delivery, while 3 of 4 parturients received general anaesthesia and 1 received spinal anaesthesia for CS (3). In our national literature, a multiparous pregnant woman who had FXI deficiency and long aPTT (49.8 s) without preoperative FXI level record received general anaesthesia after transfusion of 5 U of cryoprecipitate and 3 U of FFP for emergent CS due to intrauterine exitus at the 36$^{th}$ gestational week (4).

In the presence of FXI deficiency, the choice of a safe anaesthetic technique for CS is difficult. The normal FXI activity ranges between 50%–150% in a healthy parturient in the third trimester. Regardless of pregnancy, if the FXI activity is <15%, the deficiency is serious. If it is between 20% and 70%, the deficiency is partial (2). Singh et al. (3) applied general anaesthesia in cesarean sections after transfusion of 4 U of FFP in 2 parturients with severe FXI deficiency as 1% and 4%. On the other hand, Yücel and Koca (4) performed general anaesthesia for emergency CS in the presence of FXI deficiency after cryoprecipitate and FFP transfusion based on only long aPTT. In a healthy pregnant woman, increased levels of factors I, VII, VIII, IX, X, and XII and physiological hypercoagulability due to thrombocytopenia are observed. Levels of factors V, XI, and XIII can increase or decrease (5). According to the guidelines for transfusion, when 1 U FFP (approximately 250 mL), including all coagulation factors approximately 1 U/mL, is administered at a dose of 10 mL/kg, the factor concentration increases by approximately 20% (2). In our study, although prophylaxis was not recommended in normal vaginal deliveries due to the risk of postpartum hemorrhage (PPH), we administered FFP instead of cryoprecipitate before spinal anaesthesia because bleeding could occur to a much greater extent after surgical traumas such as those in CS. This is because FFP includes all coagulation factors, while cryoprecipitate includes FVII, vWF, fibrinogen, fibronectin, and FXIII. Interestingly, postpartum FXI activity increased to 65% after administering 2 U of FFP, and it increased by more than 20%. It is recommended to control FXI antibody and other factor deficiencies before elective surgery in which plasma products will be used (2). In


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Table 1. Results of preoperative coagulation profile (reference interval)

| Factor Inhibitor | Negative |
|---|---|
| Fibrinogen (mg/dL) | 369 (200–400) |
| Factor V (%) | 68 (50–150) |
| Factor VII (%) | 75 (50–150) |
| Factor VIII (%) | 67 (50–150) |
| Factor X (%) | 80 (50–150) |
| Factor XI (%) | 33 (50–150) |
| Factor XII (%) | 90 (50–150) |
| VwFactor antigen (%) | 72 |
| Protein S (%) | 67 (65–140) |
| Protein C (%) | 92 (70–130) |
| Activated protein C resistance | 1.8 (2–3) |
| Antithrombin III activity (%) | 65 (50–150) |
| PT (s) | 12 (10–14) |
| INR | 1.03 (0.8–1.25) |
| aPTT (s) | 30.1 (20–32) |
| Thrombin time (s) | 15 (14–20) |
| D-Dimer (ng/mL) | 255 (50–350) |

our case, factor inhibitor was negative and other parameters, except activated protein C resistance, were normal (Table 1).

In conclusion, considering the risk of PPH in addition to perioperative normal bleeding (500–1000 mL) in the choice of neuraxial analgesia and/or anaesthesia in vaginal or cesarean deliveries, spinal anaesthesia can safely be performed with control aPTT after FFP transfusion in cesarean sections in the absence of partial FXI deficiency.

## References


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### Author's Reply

Dear Editor,

We read the letter to the editor written by Günaydın et al. on our article titled "Anaesthesia Management of a Patient with Factor XI Deficiency", which was published in the issue of June 2016 in the Turkish Journal of Anaesthesiology and Reanimation, with a great interest.

We suggest that presentation of the managements of similar situations with different conditions in the formats of case series, case report or letter to the editor will shed light on literature and daily practices. We thank esteemed authors for their report.

Best regards.


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