UNEVENTFUL EPIDURAL ANALGESIA IN A PATIENT WITH SEVERE THROMBOCYTOPENIA

- Case Report -

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Abstract

Epidural analgesia is the most effective method for analgesia in labor. It has, however, contraindications and carries many serious side effects.

Though coagulopathy is an absolute contraindication for epidural and axial blocks, yet there are no absolute limits for platelet counts that stand in the way of providing epidural analgesia. In a patient who is writhing in pain due to severe uterine contractions, and in whom there exists a recent normal platelet screening and no history of bleeding disorders, it is internationally acceptable between anesthetists to provide epidural analgesia without waiting for a new platelet screening.

Introduction

Although epidural analgesia is the most effective method for analgesia in labor, nevertheless it carries risky and serious side effects.

Coagulopathy is an absolute contraindication for epidural analgesia and axial blocks. However, there are no absolute limits for platelet counts beyond which one could refuse to provide epidural analgesia to relieve labor pain. In a patient tormented with pain due to severe uterine contractions, and carrying a recent normal platelet screening and no history of chronic hepatic disease, pre-eclampsia, bruises, ecchymoses, or bleeding disorders, an epidural can be placed with minimal fear of causing a hematoma.

We report, herein, a patient with normal lab findings who received epidural analgesia. After vaginal delivery, the epidural catheter was removed, and severe thrombocytopenia was discovered, with a platelet count of $27 \times 10^9/L$, the patient had no subsequent neurologic or hematologic complications.
Case Report

A 25 year-old gravida 2 para 1, 76 kg with a history of previous cesarean section under general anesthesia, was admitted to the labor room of Hamad Medical Corporation Hospital of Doha-Qatar, for trial of labor. Her history revealed that she had an uncomplicated obstetric history, good natal care and there were no signs or symptoms or any chronic hepatic, renal, or autoimmune diseases. The only pertinent information was that she was taking paracetamol (acetaminophen) regularly (500 mg tablets three times daily for ≥1 month), for abdominal and back pain. There was no history or signs of coagulopathy in the previous pregnancies and there was no bleeding from mucus membranes and no petechiae or bruises noted. The routine hematologic studies were performed two months prior to admission to labor ward in anticipation of a normal vaginal delivery, revealed a platelet count was 200 × 10^9/L. Other complete blood count data were within normal limits.

On admission, patient was normotensive with no albuminuria or manifestations of preeclampsia and her uric acid level was normal. The options for labor analgesia were discussed with the patient, and she chose epidural analgesia. A combined spinal epidural analgesia at L3-L4 was entertained.

Following skin infiltration with a local anesthetic, a 16-gauge Tuohy and a 27-gauge spinal needle were used (combined spinal epidural Minipack: Portex, CSEcure: Hythe,UK). With the loss of resistance saline technique, the epidural space was identified. Twenty-five microgram of fentanyl plus 2.5 mg of bupivacaine were deposited intrathecally through the spinal needle. The epidural catheter was then threaded for 4 cm into the epidural space. The epidural catheter was secured as usual with a transparent dressing. There were no signs of intravascular or intrathecal injection, local anesthetic toxicity, hypotension, arrhythmias or abnormal changes in the fetal heart, were observed. An epidural infusion was started of 50 ml mixture of one mg plain bupivacaine/ml and two mcg of fentanyl/ml, with the infusion rate ranging between six to sixteen ml/hour varying with the intensity of labor pain.

Labor progressed as expected (first stage 180 min, second stage 30 min). Patient delivered a healthy baby, weighing 3300 gm with an Apgar score of 9 and 10 at 1 and 5 min respectively. The pediatrician assessed the baby and whose hematologic studies were sent to rule out any thrombocytopenic disorders, all of which revealed no abnormalities. Two hours following delivery of the placenta and suturing of the episiotomy, the epidural catheter was removed. Bleeding at injection site during removal of the catheter was noted, which was stopped by pressure for 7 min.

Results of the hematologic studies on the sample obtained before the epidural insertion, revealed a platelet count of 50 × 10^9/L (Coulter Counter). This was confirmed by the manual platelet count and a peripheral blood smear examination of the platelets, giving a count of 41 × 10^9/L and a smear showing platelets of large size (Fig. 1).

Serial platelet count estimations were then conducted which manifested a sloping curve of platelet counts in the ensuing 2 days, returning to around normal in a month’s time (Fig. 2). It was expected that
the platelet count would increase following delivery of the placenta, but it did not. Within 2 hours, the platelet count dropped from $50 \times 10^9/L$ to $27 \times 10^9/L$. The thrombin time was normal at 9.5 sec, and the partial thromboplastin time was 34 sec. The liver function tests, although still within the normal ranges, had doubled; AST increased during 22 hours from 17 to 26 U/L, in the same period ALT increased from 11 to 21 U/L.

No signs of epidural hematoma or neurologic injury were elicited. Patient moved both legs with full power (Bromberg’s score\(^1\)) was 2 out of 4 and 1 hour after the epidural, the motor strength was one out of 4 with normal free movements.

Neurologic assessment every hour during the first 6 hours and then every 2 hours during the remaining 24 hours, revealed no neurologic deficits and no abnormal vaginal bleeding. Total blood loss was 300 ml, which is the expected loss after a spontaneous vaginal delivery.

Patient was referred to a hematologist for follow-up of platelet count and coagulation state. For more than 2 months, the follow-up did not reveal any abnormalities in blood cell components and coagulation studies.

**Discussion**

The normal range for human platelet levels is between 150-450 $\times 10^9/L$. Normally, human platelet counts remain relatively stable\(^2\). In cyclical thrombocytopenia, however, platelet counts may oscillate from very low ($1 \times 10^9/L$) to normal ($150-450 \times 10^9/L$), or even higher. Cyclic thrombocytopenia, a rare manifestation, first described in 1936 and was related to hormonal changes during menstruation and changes that occur over days and months\(^3,4\). It may also be of autoimmune origin. It is common in females and usually leading to increased destruction and short life span of platelets. It may also be due to amegakaryocytic origin due to impaired platelet production, usually more common in males\(^5\).

In obstetric patients, thrombocytopenia ranges from benign disorders to life-threatening syndromes\(^6\). The idiopathic type of thrombocytopenia (ITP) was been diagnosed by peripheral blood smear examination. It is striking that in our case the changes in platelet count were rapid over few hours and an ITP diagnosis was confirmed by the large-sized platelets in the peripheral blood smear (Fig. 1). The patient had normal platelet count during her last pregnancy and had no predisposing signs of coagulopathy and no signs and symptoms of bleeding dyscrasias in the current pregnancy. Her blood count done 3 months previously, revealed a normal platelet count ($200 \times 10^9/L$). Epidural analgesia had to be started immediately as the patient was in severe labor pain. The analgesia guidelines as adopted in our Institution were implemented (normal platelet counts, not less than $100 \times 10^9/L$ within the previous 2-3 months, and without any predisposing factors of coagulation deficits).

We know of only one case report in which the patient received epidural analgesia uneventfully with a platelet count as low as $26 \times 10^9/L$\(^8\). This patient had a history of idiopathic thrombocytopenia (ITP) which the then attending anesthetist did not ascertain due to a language barrier. The patient had received corticosteroids to improve the platelet count.

In our case, the patient had normal blood components in the previous and current pregnancy. She had no history of ITP and had normal blood count ($200 \times 10^9/L$) in the previous 3 months and had received good antenatal care. It is probable that the patient platelet count was $\leq 50 \times 10^9/L$ at the time of epidural insertion and which decreased rapidly until delivery, and then started to improve spontaneously without any medications.

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**Fig. 2**

*Platelet count changes curve*

![Platelet count changes curve](image)
In ITP, platelet counts decrease, but the size and activity of platelet function is enhanced to compensate for the decrease in number\textsuperscript{11} (Fig. 1). This may explain the absence of hematoma or neurologic complications.

With regards acetaminophen (paracetamol) there are studies demonstrating that oral acetaminophen does not inhibit platelet function in vivo\textsuperscript{12,13}. Other studies, however, declare that acetaminophen is a non-steroidal anti-inflammatory drug (NSAID) and may affect platelet count if used chronically.

**Conclusion**

It is highly recommended that antenatal care be provided for all pregnant women and that platelet counts and coagulation profile should be performed on admission to the pregnant women with labor pains to the ER, regardless of whatever previous studies have shown. Patients should be monitored closely for any neurologic dysfunction after a neuroaxial block, especially in conditions with low platelet counts. It is also recommended that prospective studies of platelet screening are needed prior to the performance of epidural analgesia.

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**References**


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