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Neonatal Methemoglobinemia After Subcutaneous Injection of Lidocaine to the Mother at Birth

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Methemoglobinemia is characterized by cyanosis without respiratory distress or cardiac disease and arises from congenital and acquired causes. Oxidative agents and drugs are generally responsible for acquired causes.[1] It is well known that local anesthetics cause methemoglobinemia. Cases of methemoglobinemia in newborns due to intravenous and local lidocaine use have been reported previously.[2,3] In this report, the case of neonatal methemoglobinemia after maternal subcutaneous lidocaine injection at labor is presented.

A baby girl was born with a spontaneous vaginal delivery from a 23-year-old mother with gravida 2, parity 1, abortion 1 at the 38[4/7] week of gestation with a birth weight of 3270 g. The mother had no history of disease or drug use during pregnancy. The APGAR scores were 7 and 9 at the 1st and 5th minute, respectively. After routine care, the baby was followed up with the mother. At the eighth postnatal hour, the baby had a bluish appearance, and central cyanosis was detected in her physical examination (Figure 1A). There was no heart murmur or respiratory distress, heart rate was 156/min, respiratory rate was 44/min, and SpO_2 measured on the right hand was 88%. The patient was admitted to the neonatal intensive care unit for further examination and treatment. In the follow-up, SpO_2 values regressed to 84% and when the hyperoxia test was performed it did not increase despite 100% oxygen. Blood gases revealed pH 7.38; pCO_2 38 mmHg; HCO_3 21.8 mmol/L; BE −2.4 mmol/L; lactate 2.3 mmol/L; methemoglobin 37.1%. When the blood gas was repeated, methemoglobin resulted in 36.1%. Chest x-ray was normal. Echocardiography showed physiological PDA and small PFO. No gross pathology was observed in cranial ultrasonography. When the medical history of the mother was questioned in detail, we detected that subcutaneous lidocaine 200 mg was administered during vaginal delivery while performing episiotomy 20 minutes before the birth of the baby. Ending up with the diagnosis of methemoglobinemia, 1 mg/kg 1% methylene blue was administered intravenously with a 1-hour infusion to the patient. SpO_2 values gradually increased to 94% during the treatment (Figure 1B), and methemoglobin levels decreased to 5.2% at the end of the treatment. The urine color turned to light green following the treatment (Figure 1C). On the first postnatal day, methemoglobin levels decreased to 1%-2% and did not increase again in the follow-up.

Cases of neonatal methemoglobinemia have been reported following maternal injection of a local anesthetic during vaginal delivery. Uslu et al[4] reported methemoglobinemia in 2 newborns after pudendal injection of prilocaine to the mother.[4] Three cases have been reported that developed cyanosis after local injection of prilocaine to the mother and were diagnosed with methemoglobinemia and treated with ascorbic acid.[5] Our report aims to contribute to the literature with an additional case and with a different agent.

In conclusion, methemoglobinemia may develop in the newborn due to the use of local anesthetics such as lidocaine and prilocaine during delivery. Available information is limited to case reports and may not be sufficient to draw statistical conclusions. However, reported cases clearly indicate that this risk should not be underestimated. Therefore, we recommend to anesthesiologists and pediatricians to question whether these drugs are administered to the mother during labor and if so, to follow the newborns more closely for

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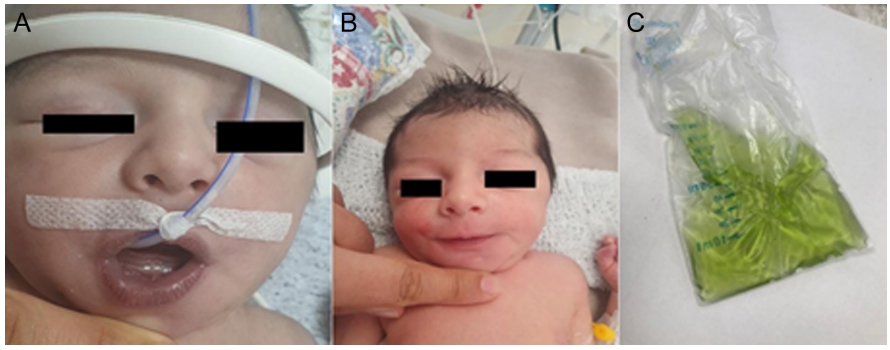

Figure 1. (A) The newborn with methemoglobinemia (methemoglobin 36%; spO_2 84%). (B) The patient at the end of methylene blue treatment (methemoglobin: 5.2%; spO_2 94%). (C) Light green color of urine after methylene blue treatment.

symptoms of methemoglobinemia and to examine newborns with blood gas for methemoglobin levels in case of doubt without delay.

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