

# LIDOCAINE ANAPHYLAXIS AFTER EPIDURAL ANESTHESIA FOR CESAREAN SECTION

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**Abstract** - Allergic reaction to local anesthetics is very rare and most of the reported cases are due to ester local anesthetics. This case presents a parturient who experienced cardiac arrest due to hypersensitivity reaction to lidocaine after epidural injection for cesarean section.

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**Key Words:** Radioallergosorbent test, hypersensitivity, lidocaine, anesthesia, regional epidural, cesarean section

## INTRODUCTION

Local anesthetics are divided into two groups: amino ester and amino amide. Lidocaine is an amino amide, which is widely used as a local anesthetic for epidural and spinal anesthesia, peripheral block, Bier block, and antiarrhythmia. A very rare side effect of this drug is anaphylaxis. In this case we report a severe hypersensitivity reaction to this drug.

### Case report :

A 27-year-old pregnant woman, G2P1A<sub>1</sub> (gestation 39 wks, weight 81 Kg, height 1.64 cm) was admitted to Akbarabadi hospital (Tehran, Iran) for elective cesarean section. In review of her past medical history the only notable finding was sensitivity to Vitamin B complex. She has had this problem from childhood and when using B complex, multiple small rashes appeared on her face and neck. These resolved without any treatment during the following hours. She also had septorhinoplasty under local anesthesia about 5 years ago and had previously undergone uneventful general anesthesia for cesarean section due to cephalopelvic disproportion. In preoperative interview, we decided on epidural anesthesia. The operating room monitoring devices included electrocardiography, noninvasive automated blood pressure cuff and pulse oximetry. Her vital signs were as follow: Blood pressure (BP) 110/60 mmHg, pulse rate (PR) 80 per minute, temperature 36.8°C, respiratory rate (RR) 13 per minute and oxygen saturation (SaO<sub>2</sub>) 98%. After setting a peripheral intravenous line, she was given 500 ml of Ringer's lactate solution. In sitting position after infiltration of

lumbosacral skin, epidural anesthesia was performed with an 18-gauge Touhy needle; using a midline approach at the L3-L4 interspace with the loss of resistance to air technique. Test dose (15 mcg epinephrine and 3 ml lidocaine 1%) was injected and afterwards she received 20 ml 2 percent lidocaine with 2 ml 7.5 percent bicarbonate. On aspiration, neither blood nor CSF was obtained. After injection, the patient was placed in the supine position with left uterine displacement and oxygen was administered via a facemask attached to anesthetic circle system. Vital signs had no significant change. Blood pressure was monitored every two minutes. Approximately 3 to 4 minutes after the injection of lidocaine, patient stopped breathing and her color became cyanotic. No pulse was detected; ECG revealed a pattern of asystole and the patient was not conscious. Cardiopulmonary resuscitation was started immediately. Bolus doses of epinephrine and ephedrine were injected and the patient was ventilated by Ambu-bag with pure oxygen. Although after short period of time the monitor showed 110 pulses per minute and 98 percent oxygen saturation, she did not respond to any mechanical stimulation. Approximately 2 minutes later she became conscious. After being assured of her alertness, stability of vital signs (BP: 130/95, HR: 94, and SaO<sub>2</sub>: 98% by facemask), and having checked the sensory level of block (T5), the operation was permitted to proceed. A healthy newborn girl with an Apgar scores of 8 in the first minute and 10 in the fifth minute was born. Her weight was 3300 gr. The mother then received 2.5 mg midazolam and 30 units of oxytocine. The operation lasted about 40 minutes without any other complication and the patient was transferred to the recovery room. Her vital signs before transfer to the recovery room were BP: 115/90 mmHg, HR: 85 bpm, SaO<sub>2</sub>: 94%. In the recovery room her respiratory rate increased to 26 per minute and she experienced mild dyspnea, the SaO<sub>2</sub> decreased to 85 percent. Chest X-ray was requested and the treatment of pulmonary edema was begun with oxygen, furosemide, hydrocortisone, and aminophylline. Chest X-ray showed the pattern of pulmonary edema.

Therefore the treatment was continued. About 1.5 hours later, the patient was transferred to ICU in a semi-sitting position, and the treatment was continued for a few more hours until the patient became stable. Two days later the patient was discharged from the hospital. Subsequent serum radioimmunoassay test (RAST) indicated a strongly positive reaction to lidocaine (3+), along with a positive skin test. Serum IgE was 340 u/ml (with normal value being 70 u/ml). Six month following the delivery, the mother and the child had a good health with no postoperative complication.

## DISCUSSION

This case represents a young woman admitted to the hospital for cesarean section under epidural anesthesia with lidocaine (lidocaine HCl 2 gr, methylparaben 0.1 gr, sodium chloride 0.6 gr in each 100 ml). A few minutes after epidural anesthesia with lidocaine she experienced cardiopulmonary arrest that ended in pulmonary edema.

The cardiopulmonary arrest, unconsciousness, and pulmonary edema in this patient might have been the result of several factors including intrathecal or intravenous injection of anesthetic agent, vasovagal reflex, cardiac disease, and sensitivity to anesthetic agent.

Intrathecal injection normally gives the classic signs of total central neurological block within 3 minutes followed by loss of consciousness, apnea and fixed dilated pupils. Our patient had all the intrathecal injection symptoms except for dilated pupils. Her pupils were small, equal and with normal reflex to light. In addition, no CSF was noticed during injection with repeated aspiration.

The initial symptoms of local anesthetic-induced CNS toxicity are feelings of lightheadedness and dizziness, and seizure is characteristic of systemic reaction due to high level of local anesthetic in blood. Our patient did not experience initial symptoms and any seizure.

Cardiac disease was another possibility for her symptoms. However, past medical history did not give any indication of heart problem and the patient had undergone uneventful general anesthesia 3 years ago. She had already a delivery with no complication. Her preoperative physical examination and echocardiogram were within normal limits.

Vasovagal shock was not the primary suspect for her cardiac arrest, since the signs were not immediate and occurred within 4 minutes of placing the patient in a supine position with left uterine displacement.

In her past medical history, she had a

septorhinoplasty in a private clinic about five years ago, under local anesthesia (lidocaine). During the operation she did experience a severe dyspnea for several minutes which resolved with no further therapy. The reason given by the surgeon for her dyspnea was aspiration of fluid during the operation. However, she denies having any symptom, including cough due to aspiration.

At this place, we became suspicious to a hypersensitivity reaction to lidocaine and carried out special related laboratory tests including RAST and skin test, which confirmed our suspicion.

It is very uncommon to have a true allergic reaction to a local anesthetic like lidocaine. Review of literature generally characterizes this incident as rare, extremely rare and in some cases it entirely questions its existence (1).

Acute adult respiratory syndrome, asystole, cardiovascular collapse and death after injection of lidocaine have been reported (2-6), but most of them had not been confirmed with laboratory tests. Palmer reported two cases with history of local anesthetic allergy (1). Groth et al presented a patient with hypersensitivity to lidocaine with no reaction to procaine (7).

It is estimated that only 1% of all reactions to local anesthetic have an allergic mechanism, most being due to ester local anesthetic (8). The local anesthetic solution also may contain methylparaben or propylparaben as preservative, which may be responsible for any allergic reaction incorrectly attributed to the local anesthetic.

We believe this case is considerable in some aspects: First, we did not find any reported case of cardiac arrest and pulmonary edema with anaphylactic source confirmed by laboratory test following epidural administration of lidocaine. Secondly, because epidural anesthesia is a common technique in surgery, especially in cesarean section, among the causes of cardiac arrest after epidural anesthesia anaphylaxis to lidocaine (even without any skin reaction) should be considered. And finally, with more attention to signs and symptoms of patient by surgeon in previous surgeries, we could change our plan and prevent disastrous events like this.

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