

## CASE REPORT

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### Anesthesia management in cesarean section with lown ganong levine syndrome

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#### Abstract

Lown Ganong Levine (LGL) which is a preexcitation syndrome is defined with paroxysmal tachycardia, dyspnea, anxiety, angina, and the complaint of fatigue accompanied by characteristic changes on ECG (short PR). Herein, we present a case of cesarean which we completed with a low-dose spinal anesthesia without problem, avoiding from general anesthesia which could be induced with numerous arrhythmogenic drugs, because of arrhythmia complication which might be mortal.

**Keywords:** Lown ganong levine, cesarean, spinal anesthesia

#### Introduction

Preexcitation syndromes are defined as two types including Wolff-Parkinson White (WPW) syndrome and Lown-Ganong-Levine (LGL) syndrome. In WPW syndrome, stimulus spreading from the atria toward the ventricles pass through an accessory pathway (Kent bundle) instead of a normal AV conduction pathway. This stimulus which pass through the Kent bundle with an abnormal by-pass reaches to the ventricles much more quickly than the stimulation passing through a normal AV conduction pathway, stimulating the ventricles (ventricular preexcitation). Apart from the kent bundle producing WPW syndrome, there are other accessory pathways termed as bundle of James (between the atrium and His bundle) and Mahain pathway (between AV node and His bundle or between a branch of His bundle and interventricular septum) which causes Lown-Ganong-Levine syndrome (LGL) [1]. I LGL Syndrome the stimulus spreading from the atria passes through the normal AV conduction pathway and then carried by Mahaim bundles to stimulate interventricular septum which results in short PR and normal QRS duration [2].

#### Case Report

A 25 year old, 67,5 kg, 163 cm pregnant patient who was scheduled for elective cesarean section with a gestation of 38W 2D was taken

to the operating room. There was no pathology other than the short PR interval on electrocardiography. Admission laboratory outcomes were normal. After the patient was placed on the operating table, intravenous infusion of 500 ml colloid was initiated, and standard monitoring was performed with electrocardiography, pulse oximetry, and noninvasive blood pressure. Arterial pressure (BP) was measured as 150/70 mmHg, heart rate (HR) as 98 beats/min, and peripheral oxygen saturation (SpO<sub>2</sub>), as 98%. Subarachnoid space was accessed at L4-L5 level in the patient in sitting position, and after the flow of cerebrospinal fluid was observed, spinal anesthesia was induced by administration of 10 mg Bupivacaine Heavy. The patient was given a tilt position of 15°C and the operation was started where the block level reached T6. The operation lasted for 15 minutes, and delivery of the baby occurred at 8th minute a living baby was born with APGAR 1-5 scores of 8 and 9, respectively. The lowest tension during the operation was read as 90/50 mmHg. HR value continued as 90-110 beats/min during the operation. The operation was completed without any problem and the patient was discharged to home on the second day.

#### Discussion

LGL is a preexcitation syndrome resulted from an abnormal conduction pathway [3]. Although low, the risk of sudden death from malignant arrhythmia in these patients is between 0.9% and 3% [4]. LGL may develop due to congenital heart diseases, mitral valve prolapsus, and cardiomyopathies. LGL is diagnosed with tachycardia, dyspnea, anxiety, angina, and the complaint of fatigue accompanied by characteristic changes on ECG [5]. One

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third of these patients may develop paroxysmal atrial fibrillation (PAF). The reason of this high incidence of PAF in preexcitation syndrome is yet to be known. PAF may be life threatening when an extremely rapid ventricular response develops against ventricular fibrillation [6].

The goal of anesthesia management is to avoid symptomatic stimuli such as pain, anxiety, intubation and extubation related stress response, and hypovolemia in LGL syndrome [7,8]. Anesthetic drugs and techniques tend to alter electrophysiology of atrioventricular (AV) conduction system. In case of general anesthesia, it is important to avoid sympathetic stimulation. Studies have found that fentanyl, midazolam, thiopental, isoflurane, and sevoflurane have no any effect on accessory pathway. In addition, propofol can be preferred, because it lacks any effect on refractory period of the accessory pathway [7,8].

Reversal agents and cholinergic agents such as succinylcholine have arrhythmogenic effects [4]. Regional anesthesia is preferred to general anesthesia in order to avoid multiple drug application [7]. We also preferred regional anesthesia in our patient in order to avoid possible drug related complications [7,8].

There are only a few case reported with spinal anesthesia for LGL syndrome. High spinal block has been avoided with a combination of low-dose bupivacaine and opioid in patients undergoing spinal anesthesia. The level of spinal anesthesia should be at a minimum dose to provide surgical facility [9]. Fluid preloading to prevent atrial distension which occurs during regional anesthesia that may increase arrhythmogenicity, may also helpful in reduction of the sympathomimetic needs that may trigger supraventricular tachycardia [5]. We also we performed fluid loading and administered bupivacaine with a low dose in order to prevent atrial arrhythmogenesis in this patient with malignant arrhythmia potential.

## Conclusion

We prefer to use regional anesthesia for the use of fewer drugs

as an alternative to general anesthesia with multiple drug use to prevent malignant arrhythmias that may develop during cesarean section with LGL syndrome in this case. However, there is a need of randomized trials with large populations to clarify this issue.

## Competing interests

*The authors declare that they have no competing interest.*

## Financial Disclosure

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