

# Anesthesia Management Of A Patient With Samter's Syndrome For Extracorporeal Shockwave Lithotripsy

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## Abstract

Background and aim: ESWL is an effective method of treatment for urinary calculi that requires conscious sedation. Bronchial asthma, nasal polyposis, and intolerance to aspirin are determined as Samter's syndrome. We present a regional anesthesia for an ESWL patient with Samter's syndrome. Case: A 38-year-old woman was admitted with a pain on left lumbar side. Renal stone was diagnosed and ESWL was planned. History revealed Samter's Syndrome, panic disorder and morbid obesity. Spinal anesthesia was preferred for the pain relief. Sensorial and motor blockade was resolved completely on the 180<sup>th</sup> minute of anesthesia and the patient was discharged uneventfully. Discussion and conclusion: The potential advantages of regional anesthesia include minimal airway intervention, less cardiopulmonary depression, effective postoperative analgesia, less postoperative nausea and vomiting. In conclusion, spinal anesthesia should be considered as an option of anesthesia management for an ESWL patient with Samter's syndrome, extreme obesity, irritable airway and panic disorder.

## INTRODUCTION

Extracorporeal shockwave lithotripsy (ESWL) is an effective treatment for urinary calculi (1) and is a moderately painful procedure requiring conscious sedation (2). Intravenous sedoanalgesia techniques are the preferred approach for ESWL procedure.

Diagnosis of bronchial asthma, nasal polyposis, and intolerance to aspirin and aspirin-like chemicals are determined as aspirin-induced asthma (AIA) or Samter's Syndrome (3). For preoperative evaluation these patients are consulted with allergy clinics to exclude possible anesthetic and sedative agent sensitivity and they may require anesthesia for nasal polypectomy or several causes.

In this case report we present a regional anesthesia choice instead of sedoanalgesia technique in a morbid obese ESWL patient who was diagnosed as Samter's Syndrome with high risk of respiratory distress.

## CASE

A 38-year-old woman was admitted to urology department with a mild pain on left lumbar side. Following initial examinations an impact renal stone (15x9 mm) at left lower renal pole was determined and ESWL monotherapy was planned. On physical examination, blood pressure (BP) and

heart rate (HR) were 170/100 mmHg and 112 bpm, respectively and morbid obesity was determined with a BMI (body mass index) of 43 kg/m<sup>2</sup>. Low frequency rhonchus was present at bilateral basal hemithorax on auscultation. Her medical history revealed hypertension, hyperlipidemia, hepatosteatosi and panic disorder and she noted penicilline allergy and dispnea in a medical center fourteen years ago. Following further examinations she was diagnosed as Samter's Syndrome. Her medical drug therapy is maintained with Valsartan hydrochlorothiazide (Codiovan, 80/12.5 mg, NovartisPharma, Istanbul-Turkey), fluoxetine HCl (Fulsac, 20 mg, Biofarma, Istanbul-Turkey), atorvastatin calcium (Lipitor, 40 mg, Pfizer, Istanbul-Turkey), ipratropium bromide/salbutamol sulphate (combivent puff, 20 mcg/dose/120 mcg/dose, BoehringerIngelheim, Istanbul-Turkey) and Fluticasone propionate nasal spray (Flixonase Aqueous, 50 mg/dose, GSK). She had percutaneous nephrolithiasis surgery 4 years ago and functional sinus surgery due to bilateral nasal polyposis and pansinusitis 1 year ago under general anesthesia.

Spinal anesthesia was preferred to prevent intractable pain during ESWL procedure although sedoanalgesia technique is widely performed in our clinic. In the ESWL room, the patient received 2-3 mg IV midazolam in a titrated dose to provide anxiolysis with minimal sedation and oxygen 2-4

mL/min was delivered via a nasal cannula and standard anesthetic monitors were applied. The initial measurements of blood pressure, heart rate and peripheral oxygen saturation were 148/75 mmHg, 90 bpm and 97%, respectively. 0.9% NaCl solution (1000 mL) was administered 30 minutes before spinal anesthesia. Spinal anesthesia was performed using midline technique on sitting position. A 25-gauge 12.7 cm Quincke spinal needle was inserted through L3-4 space. Before injection, cerebral spinal fluid was aspirated to confirm intrathecal administration. Plane bupivacaine (3 cc, 0.5% Marcaine®) was injected and spinal needle was withdrawn. At that time blood pressure (110/66 mmHg) and heart rate (86 bpm) was noted. After motor and sensory block, no supplemental IV opioids were required and patient was comfortable. The duration of the procedure was 75 minutes and in this period the patient received a total amount of 1000 mL isotonic saline. After ESWL, patient was taken to the post-anesthesia care unit (PACU) for recovery. Recovery period was uneventful, sensory and motor blockade was resolved completely following 180th minute of anesthesia and the patient was discharged when all criteria were met.

### DISCUSSION

Extracorporeal shock wave lithotripsy is one of the effective treatment way of urinary calculi (1). ESWL is the treatment of choice for renal stones with a maximal length of 2 cm or less (4). Our patient's renal stone length was less than 2 cm and ESWL was thought to be a good option for treatment.

The patient had the diagnosis of Samter's Syndrome and she has an impact renal stone at left lower renal pole and ESWL monotherapy was planned. Bronchial asthma, nasal polyposis, and intolerance to aspirin are determined as aspirin-induced asthma (AIA) or Samter's Syndrome (3). The prevalence of the syndrome in adult asthmatic population is approximately 4-10%. In these patients respiratory disease may be refractory to treatment. The aetiology of AIA is not totally understood, but most evidence emphasizes an abnormality of arachidonic acid metabolism (5). These patients are assessed in allergy clinics for preoperative evaluation of possible anesthetic agent sensitivity, and anesthesiologist may meet them for nasal polypectomy or several surgeries. Because the anesthetic management of asthma requires a specific approach, anesthesiologists must consider on pulmonary dysfunction (3)

Asthma is a common obstructive lung disease with airway inflammation, and hyperreactivity in response to a stimulus.

Resistance to airflow is the characteristic of the disease. Increase in airway resistance raise the work of breathing; so that respiratory gas exchange is impaired. Particular resistance of expiratory airflow results in air trapping and increasing in residual volume and total lung capacity. Turbulent airflow causes wheezing and this is the most seen physical finding (6). Bronchial hyperreactivity associated with asthma is an important risk factor for perioperative bronchospasm with the incidence of 0.17% to 4.2% (3).

The anesthesiologist's responsibility starts preoperatively with the pulmonary function assessment (7). We evaluated our patient carefully before the intervention. Preoperative treatment with  $\beta_2$ -adrenergic agonists and corticosteroids should be considered for reversible airway obstruction and bronchial reactivity (7). Our patient had some symptoms related with asthma such as ronchus. Therefore our patient's preoperative treatment was maintained with inhaler  $\beta_2$ -adrenergic agonists and corticosteroids.

During general anaesthesia, there is a reduction of tone in palatal and pharyngeal muscles accompanied by a lung volume reduction and an augmentation of the layer of liquid on the airway wall. These predisposing factors destroy airway conditions, cause airflow obstruction, and considerably more airway resistance (8). Airway instrumentation causes reflex bronchoconstriction via stimulation of parasympathetic nervous system (9,10). It is preferable to avoid airway instrumentation in asthmatic patients, and regional anaesthesia should always be considered for this purpose, that also reduces postoperative complications (9). On this account for this patient we planned and performed regional anesthesia although our clinic's routine anesthesia management in ESWL is intravenous sedoanalgesia. Adequate sedation of the patient should be achieved in order to avoid perioperative complications. Benzodiazepines are thought to be safe agents for this aim (9). We administered midazolam for sedation. Concurrently our patient has panic disorder and sedation is so important for this patient because of her psychological component.

According to National Institutes of Health (NIH), our patient is classified as extreme obesity (BMI  $\geq 40$  kg/m<sup>2</sup>). Both asthmatic component of Samter's Syndrome and morbid obesity are handicaps due to possible respiratory problem during ESWL procedure. Spinal anesthesia was performed in the operation room for our patient and she was transported to ESWL room after confirmation of sensorial and motor blockade levels and adequate hemodynamic stability.

Less airway irritation and cardiopulmonary depression, minimal postoperative nausea/vomiting, contribution to postoperative analgesia and short-time recovery room stay are the known advantages of regional anesthesia. These subjects are particularly important for the obese surgical patients (<sub>11</sub>). So that not to encounter respiratory depression and hypoxemia, we didn't perform our routine procedure of sedoanalgesia, but we preferred regional anesthesia.

## CONCLUSION

In conclusion we have presented a patient who was suffering from Samter's syndrome, extreme obesity and panic disorder undergoing ESWL. A situation such as the one in our case, the anesthesiologist must evaluate the patient attentive and carefully and must make a decision and execute the plan for the successful anesthesia management.

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