

Unexpected Sudden Bouts of Coughing During Endourology Procedures: Sign of Impending Doom

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INTRODUCTION

This is a case report of left sided Ureteroscopic lithotripsy (URSL) for left upper ureteric stone under spinal anesthesia in a healthy young man. The patient all of sudden featured unexplained continuous cough during the procedure. Coughing persisted with cyanosis of the patient with hemodynamic instability. The patient was immediately kept in steep Trendelenburg position with CPAP mask to breathe 100% oxygen. Vasopressors and fluid resuscitation was started. His coughing gradually declined with saturation improvement. Inadvertent air embolism is a possibility in endourological procedure and constant coughing can be a warning sign of fatal air embolism. Suspicion of this situation, rather than sedating the patient, with appropriate measures saves lives. Steep head down position dislodges the entrapped air to the right ventricle and right ventricular outflow tract is cleared off to restore the cardiac output. The patient was successfully rescued and shifted to the intensive care unit. This is a rare but likely adverse complication during endourological practice that every stakeholder must be aware of.

ABSTRACT

Endourological procedures are commonly performed in our daily practice. Most of the time, this type of surgery is usually performed under regional anesthesia and is usually not associated with any complications. The irrigation pump used in such procedures consists of irrigating fluid flowing in high pressure. If left unnoticed, sometimes irrigating fluid can lead to passage of air into the patient venous system leading to air embolism. This can be a disastrous complication leading to even sudden mortality. Here we present a case of such incident where patient has sudden coughing followed by drop in oxygen saturation.

KEY WORDS

Air embolism, Anesthesia, Endourology, Persistent cough

CASE REPORT

This is a case report of left sided Ureteroscopic lithotripsy (URSL) for left upper ureteric stone under subarachnoid block in a man aged 37 years, otherwise healthy ASA I status with no obvious history of any systemic comorbidities. Left sided URSL was planned under spinal anaesthesia with total 3 ml of 0.5% hyperbaric bupivacaine given under aseptic precautions using 27G Whitacre needle. Left sided URSL was carried out in lithotomy position. Patient was monitored with ECG, SpO₂, NIBP and he was hemodynamically stable with normal sinus ECG recording.

The ureteric stone was traced and it was disintegrated. After 20 minutes of the start of the procedure, there was an attempt to disintegrate the stone dislodged to upper ureter. The procedure was almost in the verge of completion.

The patient all of sudden exhibited intractable unexpected bouts of persistent cough. His ECG showed sinus tachycardia to 165 beats/minute, saturation dropped from 97% to 75% and the coughing persisted with sudden notice of cyanosis of the patient. Blood pressure dropped from 120/85 to

80/60 mmHg from his starting hemodynamics, which later dropped down to 60/40-50/30 mmHg. This incident was not associated with any drug or contrast dye administration and the surgical procedure was about to complete with around injection Normal saline of 1400 ml infused in total.

The patient was immediately kept on to supine position. There were bubbles of air visualized in the irrigation saline container which might have been sucked into the area of intervention. The water chamber should be continuously filled with irrigating saline and inadvertently the air might have been sucked by the system by mistake. The patient was immediately kept in steep Trendelenburg position with CPAP mask completely holding tight and asked him to breathe 100% oxygen. There was tumultuous hemodynamics with multiple short run VPCs and dysrhythmias with hypotension. He was turned Trendelenburg and inclined to the left. Vasopressors and fluid resuscitation was started as per need and his coughing gradually declined with saturation improvement.

After 45 minutes of CPAP on the mentioned position, he became stable with normal saturation without coughing. He was then positioned supine with head up position. The remaining procedure was abandoned for next stage. Patient was shifted to intensive care unit for further monitoring and investigation. His 12 lead ECG, echocardiography and cardiac enzymes revealed normal values. He was discharged on 3rd postoperative day with normal status of his health and physiology.

DISCUSSION

Any symptom shown by the patient during perioperative period is important to all clinicians and must be taken into thoughts for consideration of the possible differential diagnosis.¹

Chinese irrigation pump used in endourology for clear visualization and washout of disintegrated stones create pressure of 250 to 300 cm H₂O intermittently. In fact this much pressure is usually not required in URSL unless surgeon is facing the impacted stone. If happened to create higher pressure to clear out the trapped stone pieces, the pressure is far more than that in venous system. Inadvertent

breach of tissue during the endoscopic procedure and passage of air in the irrigation system pose pre-requisite for systemic air embolization.

Surgery under spinal anaesthesia further favours this situation. We assumed air bubbles locked the pulmonary artery after its entrance to the venous system through breached tissue. Air embolization invited sudden burst of coughing. There is a sparse of such incident in the literature, but there is possibility of this symptom mentioned in the literature by Lin Shi.² The incidence of coughing has been reported to be up to 20%.³

Tachycardia, bradycardia followed by drop in both arterial blood saturation with oxygen and hemodynamics is the sequelae.⁴ Steep head down with lateral tilt (Durant position) and CPAP in this case allowed the air column migrate it into the right ventricular cavity out from the right ventricular outflow tract due to its lighter density and gradually dissolved on its own with time and symptoms stabilized.^{5,6}

Attempts to sedate the patient while coughing might worsen the condition as a mere sedation does not dissolve the air lock. Coughing might be the worse symptom of a warning sign of air embolism.^{1,5}

Chest pain, fear of feeling of death, palpitation, dyspnoea, cyanosis, tightness in chest are other features patients might complain if awake.⁷ The incident might be missed easily to the cardiac arrest under general anesthesia if probability of such incident is not born in mind and measures taken faster.

Always follow the irrigation system not to allow air to pass into the system even if tissue injury had happened and this should be immediately notified to anesthetist counterpart for immediate action.

What if this case had been undertaken under general anesthesia or attempted to have the patient sedated! It could have been monitored through exhibition of its typical pattern in capnograph.

Bouts of violent coughing must not be ignored and should be managed with appropriate measure without delay to avoid unrepeatability outcome.

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