

# Vasovagal Response During Thoracic Paravertebral Catheter Insertion: A Known but Underreported Event

Shilpi Agarwal, Sachidanand Jee Bharti and Wasimul Hoda\*

Department of Oncoanaesthesia and Palliative Medicine, Dr. BR Ambedkar IRCH AIIMS, New Delhi -110029, India

\*Corresponding author: Wasimul Hoda, Department of Oncoanaesthesia and Palliative Medicine, Dr. BR Ambedkar IRCH AIIMS, New Delhi -110 029, India, Tel: +91-8797770602; E-mail: wasu077@gmail.com

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## Abstract

Vasovagal syncope is defined as a sudden and transient loss of consciousness. We report a case of vasovagal attack during insertion of thoracic paravertebral catheter. A 28 year old male ASA I, case of bronchus Schwannomas was posted for left sided Pneumonectomy. Past history of 2 episodes of dizziness and fainting on visualization of blood. During insertion of the catheter through the needle, patient felt paraesthesia and complained of giddiness and became unconscious. The monitor showed sudden bradycardia and hypotension. The blood glucose was found to be 55 mg/dl. 25% dextrose 100 ml was given to correct hypoglycemia. Patient was resuscitated and surgery completed. Therefore, Vasovagal episodes along with regional anesthesia can be a significant hazard. Attention must be given to patients with history of vasovagal episodes. Adequate comfortable positioning, reassurance, adequate sedatives to relieve anxiety and preprocedure optimization of blood glucose may be useful in such patients.

**Keywords:** Regional anesthesia; Uoracic paravertebral catheter; Vasovagal syncope; Hypoglycemia

## Introduction

Vasovagal syncope is defined as a sudden and transient loss of consciousness. Ue abnormal or exaggerated autonomic response to a range of stimuli of which the erect posture and emotional upsets are common causes for this condition. Ue clinical manifestation may range from hypotension associated with bradycardia, heart block or even a sinus arrest [1]. In most of the cases the onset is rapid and recovery is spontaneous and complete, but it can cause serious conditions like cardiac asystole if lel unnoticed. Uus these episodes should be taken seriously during the perioperative period.

## Case Report

We report a case of vasovagal syncope during insertion of thoracic paravertebral catheter and before administering any drug through it. To the best of our knowledge it is one of the rarely reported incidents in a paravertebral block.

A 28 year old male ASA I, case of lel main bronchus Schwannomas was posted for lel sided Pneumonectomy. CT scan showed an endoluminal mass in lel main bronchus with lel lung collapse. His past history included 2 episodes of dizziness and fainting about 10 years ago on visualization of blood during visit to hospital and withdrawing of blood from his vein for some investigations.

Ue patient was taken in OT and monitors attached with normal baseline ECG. His vitals were recorded with HR of 80/min, BP 110/80 mm Hg, SpO<sub>2</sub> 100%. A lel sided thoracic paravertebral block was planned at T8-T9 level for adequate perioperative pain relief. Aler explaining the procedure to the patient, he was asked to be in a sitting position on the OT table. USG guided screening of the paravertebral space was done. Local anesthetic infiltration was done at desired level.

Ue paravertebral space was identified with the Touhy needle. During insertion of the catheter through the needle, patient felt paraesthesia and complained of giddiness and said "I will faint". Ue monitor showed bradycardia with a heart rate of 35/min and hypotension (BP 60/40 mm Hg). Ue ECG also changed from sinus rythm to heart block pattern. Meanwhile the patient started losing consciousness. Immediately the procedure was abandoned and he was made to lie supine, but he was not responding. 100% oxygen was given, IV fluid was rushed and 6 mg of mephenteramine was given. Ue blood glucose was checked and it was 55 mg/dl. 25% dextrose 100 ml was given to correct hypoglycemia. Ue patient regained consciousness within 2-3 minutes. Ue vitals soon returned to normal with HR of 70/min and BP of 100/70 mm Hg. Ue ECG showed normal sinus rythm within 5 minutes. We monitored the patients for another 10 minutes and aler his vitals became stable, patient was induced with Fentanyl 100 µg, Propofol 100 mg and Rocuronium 40 mg. A right sided DLT 35 FR was placed. Aler inducing the patient intrathecal morphine 300 µg was given for postoperative analgesia. Ue surgery started and duration of one lung ventilation was for 2.5 hours. Intraoperatively vitals were stable, patient was extubated uneventfully and shiled to Recovery Room.

We assumed that the vasovagal attack was provoked by preoperative anxiety in our patient which culminated when the paraesthesia was elicited by the paravertebral catheter, sitting position and hypoglycaemia which further precipitated this event. Ue reasons of Vasovagal attack during thoracic paravertebral block could be upright sitting position during procedure, stress, epidural spread due to bilateral sympathetic block and activation of Bezold Jarish reflex resulting in parasympathetic activation. Premedication with anxiolytics can be useful in such anxious patients, but no anxiolytic was used in our patient.

Uere may be a transient catecholamine surge by any of these triggering events which enhances myocardial contractility leading to stimulation of the myocardial mechanoreceptors (C-fibers). Ue result

of activation of these nonmyelinated -C fibres due to contraction of empty left ventricle is Bezold-Jarisch reflex leading to bradycardia and hypotension [2]. However these episodes related to thoracic paravertebral block are not common [3].

It is well known that limbic system is concerned with emotions and activation of limbic sympathoadrenal system can cause hypotension and bradycardia. There is evidence that endogenous opioids are neurotransmitters in nucleus tractus solitarius and are involved in syncopal reactions in animals [4].

Our patient's history may reveal such episodes of syncope in response to certain triggers. Our autonomic nervous system function may be determined preoperatively in patients to detect patients at risk of significant hemodynamic compromise. Our activity of the autonomic nervous system during an analysis of heart rate variability (HRV) can be measured by table tilt test which is a useful and non-invasive test [5]. In this case as other clinical sign of autonomic dysfunction like heart rate variability and postural hypotension was absent, so further autonomic function workup was not done.

Even, the hypoglycemia is considered to be a possible factor in the induction of vasovagal syncope which was seen in our case. "Hypoglycemia can be induced by parasympathetic activation and it may act in synergy with hypotension and hypocapnea to induce loss of consciousness. Also psychogenic syncope may be mediated through a mechanism involving hypoglycemia" [6].

## Conclusion

Vasovagal episodes along with regional anesthesia can be a significant hazard. Attention must be given to history of vasovagal

episodes in past. Proper communication before the procedure is important in trying to prevent the condition. Adequate comfortable positioning preferably supine in such patients, reassurance, adequate sedatives to relieve anxiety and pre procedure optimization of blood glucose may be useful to a successful regional block. Careful hemodynamic monitoring, communication with patient and blood glucose estimation before regional blocks are essential to prevent such events. Therefore, early and aggressive management of any vasovagal episode is recommended for a successful outcome.

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