Case Report

Postoperative vasovagal cardiac arrest after spinal anesthesia for lumbar spine surgery

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INTRODUCTION

Spinal anesthesia during lumbar surgery is a safe and effective alternative to general anesthesia for patients across a wide range of ages and health statuses.¹ Most candidates for lumbar surgery are appropriate for spinal anesthesia, but there are certain considerations that may preclude/limit its use. Here, we present a 62-year-old male who underwent an L3-L5 decompressive laminectomy under spinal anesthesia and experienced a brief postoperative episode of pulseless electrical activity (PEA), deemed to be a vasovagal event.

CASE DESCRIPTION

A 62-year-old male presented with progressive/severe neurogenic claudication. He had a previous L1 burst fracture with fusion surgery 10 years prior, and now has severe L3/L4 and L4/L5 spinal stenosis on imaging [Figure 1]. He also had a notable history of several vasovagal syncopal episodes attributed to needles and blood, a trait shared by several relatives. Following a routine L3-L5 laminectomy with onlay arthrodesis under spinal anesthesia, the patient was brought to the post-anesthesia care unit (PACU). He initially reported being lightheaded, and a nurse subsequently noted precipitous bradycardia that progressed to PEA arrest. Chest compressions...
and the routine arrest protocol were initiated; after 30 s, the patient had return of spontaneous circulation and had an uneventful recovery. Cardiology and electrophysiology concluded that this event was most likely a vagal response to anesthesia.

**DISCUSSION**

Here, we present the case of a 62-year-old male who experienced brief PEA arrest in the PACU after an uneventful lumbar surgery under spinal anesthesia. This episode was attributed to a vasovagal reflex (also known as the Bezold-Jarisch reflex or neurocardiogenic syncope). This reflex can result in bradycardia, vasodilation, and hypotension. This may occur in surgery under spinal anesthesia for several reasons: blood loss/hypovolemia, sympathetic blockade/peripheral vasodilation/reduced venous return, and positioning (i.e., reverse-Trendelenburg and sitting upright) with venous pooling in the lower extremities. However, in the setting of spinal anesthesia, it can cause

**Table 1:** Overview of reported cases of bradycardia/asystole occurring with neuraxial anesthesia where either (1) the event occurred post-operatively or (2) the patient had a history of vasovagal episodes.

| Authors         | Age | History of vasovagal episodes                                      | Operation                  | Anesthesia | Event       | Setting | Resuscitation outcome |
|-----------------|-----|---------------------------------------------------------------------|----------------------------|------------|-------------|---------|-----------------------|
| Present case    | 62  | Fainted at the sight of a needle and felt light-headed during gory movies | L3-L5 decompressive laminectomy | Spinal     | Asystole    | PACU    | Full recovery          |
| Geffin et al.   | 54  | None reported                                                       | Cystoectomy                | Spinal     | Severe bradycardia (HR=35) | PACU    | Full recovery          |
| Geffin et al.   | 27  | Two syncope episodes while giving blood                             | Cysto, fulguration         | Spinal     | Severe bradycardia (HR=30) | PACU    | Full recovery          |
| Løvstad et al.  | 50  | None reported                                                       | Knee arthroscopy           | Spinal     | Asystole    | OR (right after operation end) | Full recovery          |
| Thrush et al.   | 37  | Passing out at sight of needles and fainting (with stable HR and BP) after receiving spinal anesthetic | Cervical cerclage          | Spinal     | Asystole    | OR      | Full recovery          |
| Jang et al.     | 39  | 10-year history of daily self-limited palpitations                  | Cesarean section           | Spinal     | Asystole    | OR      | Full recovery          |
| Liguori et al.  | 34  | History of fainting                                                 | Anterior cruciate ligament reconstruction | Epidural   | Asystole    | OR      | Full recovery          |
| Liguori et al.  | 42  | None reported                                                       | Anterior cruciate ligament reconstruction | Epidural   | Asystole    | PACU    | Full recovery          |
| Liguori et al.  | 65  | None reported                                                       | Total knee replacement      | Epidural   | Severe bradycardia (HR=28) | PACU    | Full recovery          |

PACU: Post anesthesia care unit, OR: Operating room, HR: Heart rate
serious complications by precipitating bradycardia and asystole.[7]

There is precedent in the literature for patients with a history of vasovagal episodes experiencing similar events under regional anesthesia [Table 1].[2,5,6,9] There are certain factors that appear to increase this risk: young age, ASA status, beta blocker therapy, and a sensory level above T6.[8]

Kinsella et al. offer several suggestions for avoiding vasovagal arrest under spinal anesthesia.[4] To treat bradycardia during spinal anesthesia, Pollard et al. recommends the stepwise use of atropine, ephedrine, and epinephrine.[8] We add that vasovagal arrest can also occur in the PACU setting in spinal anesthesia patients, and recommend screening for a history of vasovagal episodes.

CONCLUSION

This case report describes an episode of vasovagal cardiac arrest occurring in the PACU following spinal anesthesia for lumbar stenosis surgery, and we recommend asking patients about their history of vasovagal events to gain some insight into their risk for vasovagal complications such as PEA following spinal anesthesia.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Conflicts of interest

There are no conflicts of interest.

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