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COMBINED SPINAL-EPIDURAL ANESTHESIA FOR HYSTERECTOMY IN GYNECOLOGICAL PATIENTS WITH CARDIOVASCULAR PATHOLOGY

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Abstract
Among elderly gynecological patients with concomitant cardiovascular diseases, anesthesia management represents a high-risk challenge due to the susceptibility of this group to intraoperative hemodynamic instability. Combined spinal-epidural anesthesia (CSEA) offers significant advantages by providing reliable analgesia, reducing systemic drug requirements, and minimizing cardiovascular stress. In this study, we analyzed 30 patients aged 60–80 years undergoing hysterectomy under CSEA. Our findings demonstrated that intrathecal administration of 10 mg of 0.5% bupivacaine combined with epidural fentanyl resulted in mild and transient decreases in blood pressure and heart rate, stabilizing within 20–30 minutes. Compared to general anesthesia, CSEA provided superior hemodynamic stability and fewer cardiovascular complications. This paper further discusses the clinical significance of CSEA in elderly patients, comparing our results with international studies and guidelines.

Keywords: Combined spinal-epidural anesthesia; hysterectomy; cardiovascular pathology; elderly patients; hemodynamic stability; multimodal anesthesia.

INTRODUCTION

The growing proportion of elderly patients undergoing gynecological surgery has raised new challenges in perioperative anesthesia management. Cardiovascular comorbidities such as coronary artery disease, hypertension, and arrhythmias significantly increase the risk of anesthesia-related morbidity and mortality. Traditional general anesthesia is associated with marked hemodynamic

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fluctuations and stress responses, which can precipitate intraoperative complications.

Combined spinal-epidural anesthesia (CSEA) has emerged as an effective alternative, combining the rapid onset of spinal anesthesia with the flexibility of epidural techniques for intraoperative and postoperative analgesia. Previous studies [Liu et al., 2021; Antipin et al., 2013] have shown that CSEA reduces systemic stress responses, provides better pain control, and stabilizes circulation in high-risk patients. However, its role in elderly gynecological patients with cardiovascular pathology remains insufficiently explored, particularly in low- and middle-income countries.

The present study aims to evaluate the hemodynamic effects of CSEA in elderly gynecological patients with cardiovascular comorbidities undergoing hysterectomy and to compare the results with international findings.

MATERIALS AND METHODS

This study included 30 patients aged 60–80 years (mean 78 ± 8 years) with ASA class III or higher, undergoing hysterectomy at Tashkent Medical Academy. Patients were randomly assigned to undergo CSEA.

- **Preoperative preparation**: ECG monitoring, venous catheterization, and prophylactic anticoagulation with low-molecular-weight heparin.
- **Anesthesia technique**: Epidural catheterization at L2–L3, followed by spinal puncture at L3–L4. Intrathecal injection of 10 mg 0.5% bupivacaine, with epidural administration of fentanyl (20 µg). Sedation with IV propofol (0.3–1.1 mg/kg/hr).
- **Monitoring**: Blood pressure, heart rate, cardiac output, and systemic vascular resistance were continuously recorded using YM 300 monitoring system.
- **Endpoints**: Changes in hemodynamic parameters during the first 30 minutes post-induction and throughout surgery.

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RESULTS

Table 1. Hemodynamic changes after CSEA induction (n=30)

Time (min)	Systolic BP (mmHg)	Diastolic BP (mmHg)	Mean BP (mmHg)	Heart rate (bpm)
0	140.6 ± 6.5	88.2 ± 3.1	105.6 ± 6.0	72.2 ± 8.7
5	126.4 ± 4.0	83.7 ± 2.2	97.9 ± 4.2	70.1 ± 5.3
10	119.5 ± 3.1	79.9 ± 2.1	93.1 ± 4.0	66.4 ± 3.7
15	117.9 ± 4.0	76.8 ± 3.0	90.5 ± 3.7	65.3 ± 4.1
20	120.1 ± 2.7	77.7 ± 3.2	91.8 ± 3.9	67.9 ± 2.7
30	138.7 ± 4.1	83.9 ± 2.9	102.1 ± 3.8	71.2 ± 4.

DISCUSSION

Our findings show that CSEA produces only a mild, transient decrease in blood pressure and heart rate, with stabilization occurring within 20–30 minutes. This is consistent with Liu et al. (2021), who reported lower cardiovascular stress responses under CSEA compared to general anesthesia. Similarly, Antipin et al. (2013) highlighted reduced postoperative complications when multimodal anesthesia techniques were used in hysterectomy patients.

The hemodynamic stability provided by CSEA is particularly important in elderly patients with cardiovascular pathology, where even minor fluctuations can precipitate ischemic or arrhythmic events. Furthermore, epidural catheterization allows flexible intraoperative analgesia, reducing systemic opioid consumption.

Compared to international standards, our results reinforce the importance of regional anesthesia techniques in elderly high-risk populations, supporting WHO and European Society of Anesthesiology guidelines for multimodal perioperative management.

CONCLUSION

CSEA is a safe and effective anesthetic approach for elderly gynecological patients with cardiovascular comorbidities. It provides stable hemodynamics, reduces perioperative risks, and ensures effective pain control. Wider adoption of CSEA in similar patient populations could significantly improve outcomes and reduce postoperative complications.

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