

Suspected sevoflurane-associated hypersensitivity reaction in a pediatric patient: a case report

İşin Gençay^{*1}, Yiğit Ali Keleş¹, Gülçin Aydın¹, Kevser Peker¹, Esra Polat¹, Cem Gençay²¹Department of Anaesthesiology and Resuscitation, Faculty of Medicine, Kırıkkale University, Kırıkkale, Türkiye²Department of General Surgery, Yenimahalle Training and Research Hospital, Ankara, Türkiye

Cite this article: Gençay I, Keleş YA, Aydın G, Peker K, Polat E, Gençay C. Suspected sevoflurane-associated hypersensitivity reaction in a pediatric patient: a case report. *Eur J Anesthesiol Intens Care*. 2026;3(3):83-85. doi:10.51271/EAJAIC-0059

***Corresponding Author:** İşin Gençay, snyzc@yahoo.com

Received: 24/07/2026

Accepted: 24/08/2026

Published: 29/08/2026

ABSTRACT

Perioperative hypersensitivity reactions are uncommon but potentially serious complications that require early recognition and appropriate management. Although numerous drugs and substances used during anesthesia may cause hypersensitivity reactions, reactions associated with volatile anesthetic agents are extremely rare. We present a six-year-old girl who developed an acute cutaneous hypersensitivity reaction approximately five minutes after inhalational induction with sevoflurane. Erythema and swelling developed over the trunk without respiratory distress, oxygen desaturation, hemodynamic instability, or other systemic manifestations. Sevoflurane was discontinued, the anesthesia circuit was changed, and 100% oxygen was administered. Following establishment of intravenous access, crystalloid fluid and pharmacological treatment with an antihistamine, corticosteroid, and inhaled bronchodilator were administered. The clinical findings improved without progression and surgery was subsequently completed. This case highlights that hypersensitivity reactions may rarely occur during inhalational induction with sevoflurane and may pose a particular challenge when intravenous access has not yet been established.

Keywords: Sevoflurane, inhalational anesthesia, hypersensitivity reaction, pediatric anesthesia, perioperative allergy

INTRODUCTION

Perioperative hypersensitivity may present with findings ranging from isolated skin changes to severe respiratory and cardiovascular compromise.^{1,2} During anesthesia, recognizing such reactions can be difficult because symptoms that would normally be reported by an awake patient are unavailable and changes in respiratory or circulatory status may have several competing explanations.²

Potential perioperative triggers include neuromuscular blocking agents, antibiotics, latex, chlorhexidine, colloids, and other drugs or materials encountered around the time of anesthesia.^{2,3} Volatile anesthetics are rarely implicated. Nevertheless, their role becomes relevant when a reaction begins during inhalational induction before other commonly suspected intravenous agents have been administered.

Sevoflurane is commonly selected for inhalational induction in children, especially when anxiety or poor cooperation makes awake intravenous cannulation difficult. Published evidence of immediate hypersensitivity to sevoflurane is

very limited, although a pediatric case with allergy testing supportive of sevoflurane as the trigger has been reported.⁴

Here, we describe a six-year-old child who developed acute erythema and swelling during sevoflurane induction while intravenous access was still being obtained. The case is notable for the isolated cutaneous presentation, stable respiratory and cardiovascular status, and the practical difficulty of managing an unexpected reaction before vascular access is available.

CASE

A six-year-old, 24-kg girl was scheduled for elective adenoidectomy. Her preoperative evaluation revealed no known history of allergy. Physical examination findings were normal, and the patient was classified as American Society of Anesthesiologists (ASA) physical status I.

Standard monitoring, including electrocardiography, non-invasive blood pressure measurement, and pulse oximetry,

was initiated. Anesthesia was induced with 7% sevoflurane in 100% oxygen. No medication other than sevoflurane and oxygen had been administered before the onset of the cutaneous findings.

Approximately five minutes after the initiation of sevoflurane administration, while peripheral intravenous cannulation was being performed, erythematous lesions accompanied by swelling developed over the trunk. No oxygen desaturation or respiratory distress was observed. The patient's hemodynamic parameters and other monitored vital signs remained stable throughout the event.

Considering the temporal relationship between exposure to sevoflurane and the onset of the cutaneous findings, an acute hypersensitivity reaction associated with sevoflurane was suspected. Sevoflurane administration was immediately discontinued, the anesthesia circuit was changed, and 100% oxygen was administered.

Peripheral intravenous access was subsequently established, and crystalloid fluid was administered at a rate of approximately 80 ml/h. pheniramine maleate (Avil) was administered intravenously at a dose of 2 mg/kg, and dexamethasone (Dekort) was administered intravenously at a dose of 0.3 mg/kg. salbutamol (Ventolin) was administered as a single puff through the endotracheal tube. Epinephrine was not administered because the reaction remained limited to cutaneous manifestations without respiratory or cardiovascular compromise.

Following treatment, the cutaneous findings did not progress to systemic involvement and resolved during the emergence phase of anesthesia. After discontinuation of sevoflurane, rocuronium (Esmeron) 0.6 mg/kg was administered intravenously, and the patient was subsequently intubated. Anesthesia was maintained using total intravenous anesthesia (TIVA), with a propofol infusion initiated at 6 mg/kg/h. The surgical procedure lasted approximately one hour and was completed without further complications. The patient recovered from anesthesia uneventfully and was transferred to the post-anesthesia care unit for postoperative observation.

Further evaluation by a pediatric allergy and immunology department was recommended to investigate the suspected hypersensitivity reaction and to assist in planning future anesthetic procedures.

DISCUSSION

The clinical spectrum of perioperative hypersensitivity is broad. Skin findings such as erythema, urticaria, flushing, and edema may occur alone or together with respiratory or cardiovascular abnormalities.^{1,2} In our patient, erythema and swelling were confined to the trunk and appeared approximately five minutes after sevoflurane was started. Oxygen saturation, respiration, and hemodynamic parameters remained normal. The presentation therefore differed from anaphylaxis, in which clinically significant involvement beyond isolated cutaneous manifestations is expected according to current diagnostic criteria.¹

The sequence of exposures is central to interpretation of this case. The reaction began during inhalational induction, while peripheral intravenous access was being attempted. The close temporal relationship made sevoflurane a plausible trigger. However, chronology alone cannot prove drug allergy. Perioperative reactions should be assessed with attention to all relevant exposures, and specialist investigation is recommended when identification of the responsible agent may influence subsequent anesthetic care.³ Because confirmatory allergy testing was not available in this patient, we describe the event as a suspected sevoflurane-associated hypersensitivity reaction rather than confirmed sevoflurane allergy.

Evidence for immediate hypersensitivity to sevoflurane remains scarce. Simonini et al.⁴ described a six-year-old child who developed anaphylactic shock during anesthesia for adenotonsillectomy, with subsequent allergy investigation supporting sevoflurane as the causative agent. The comparison with our patient is clinically relevant: both reactions occurred in young children exposed to sevoflurane, but the severity was markedly different. Our patient had cutaneous involvement only, without desaturation, respiratory distress, hypotension, or other hemodynamic deterioration. This contrast illustrates that a suspected reaction associated with the same anesthetic exposure may present across different levels of clinical severity.

The absence of intravenous access at symptom onset was another important feature. Inhalational induction is often chosen in pediatric practice because awake cannulation is difficult, as in this patient. If a reaction progresses rapidly to bronchospasm or cardiovascular compromise, lack of immediate vascular access may complicate treatment. In the present case, sevoflurane was stopped, the circuit was changed, and 100% oxygen was administered while intravenous access was established. Crystalloid fluid, an antihistamine, a systemic corticosteroid, and inhaled salbutamol were subsequently given. The skin findings improved and no systemic progression occurred.

Epinephrine is the first-line pharmacological treatment for anaphylaxis.¹ It was not administered in this case because the patient remained hemodynamically stable, maintained normal oxygenation, and showed no respiratory compromise. The procedure was completed after clinical improvement, and recovery from anesthesia was uneventful.

From a practical perspective, this case draws attention to an uncommon event at a vulnerable stage of pediatric anesthesia. Even when inhalational induction is undertaken in an otherwise healthy child with no known allergy history, unexpected hypersensitivity may occur before intravenous access is secured. Readiness to discontinue a suspected trigger, support oxygenation and circulation, obtain vascular access rapidly, and escalate treatment according to clinical severity remains essential.

CONCLUSION

Hypersensitivity reactions associated with sevoflurane are extremely rare but should be considered when compatible clinical findings develop during inhalational induction.

In the present case, a six-year-old girl developed isolated cutaneous findings approximately five minutes after exposure to sevoflurane, without respiratory or cardiovascular involvement. Although the temporal association raised suspicion of a sevoflurane-associated hypersensitivity reaction, confirmatory allergy testing was not available and therefore sevoflurane could not be established as the definitive causative agent. Prompt recognition, discontinuation of the suspected agent, close monitoring, and appropriate supportive treatment were followed by clinical improvement. This case emphasizes the challenges of managing suspected hypersensitivity during pediatric inhalational induction before intravenous access has been established.

The temporal association raised suspicion of a sevoflurane-associated hypersensitivity reaction; however, in the absence of confirmatory allergy testing, sevoflurane cannot be established as the definitive causative agent. Prompt recognition, discontinuation of the suspected agent, close monitoring, and appropriate supportive treatment were followed by clinical improvement.

This case particularly emphasizes the challenges posed by hypersensitivity reactions occurring during pediatric inhalational induction before intravenous access has been established. Clinicians should remain prepared for rapid recognition and management of such reactions, even when volatile anesthetic agents are the only major anesthetic exposure at the time of onset.

ETHICAL DECLARATIONS

Informed Consent

Informed consent was obtained from the legal guardians of the pediatric patient described in this report. Where developmentally appropriate, assent was also sought from the child.

Peer Review Process

This report underwent external peer review.

Conflict of Interest

The authors declare no conflicts of interest.

Financial Disclosure

This case report did not receive any financial support.

Author Contributions

Concept: IG, YAK, GA, KP, EP, CG; Design: IG, YAK, GA, KP, EP, CG; Data Collection and/or Processing: IG, YAK, GA, KP, EP, CG; Analysis and/or Interpretation: IG, YAK, GA, KP, EP, CG; Literature Review: IG, YAK, GA, KP, EP, CG; Writing the Article: IG, YAK, GA, KP, EP, CG; Critical Review: IG, YAK, GA, KP, EP, CG.

REFERENCES

- Cardona V, Ansotegui IJ, Ebisawa M, et al. World Allergy Organization anaphylaxis guidance 2020. *World Allergy Organ J.* 2020;13(10):100472. doi: 10.1016/j.waojou.2020.100472
- Dewachter P, Savic L. Perioperative anaphylaxis: pathophysiology, clinical presentation and management. *BJA Educ.* 2019;19(10):313-320. doi: 10.1016/j.bjae.2019.06.002
- Garvey LH, Ebo DG, Mertes PM, et al. An EAACI position paper on the investigation of perioperative immediate hypersensitivity reactions. *Allergy.* 2019;74(10):1872-1884. doi: 10.1111/all.13820
- Simonini A, Brogi E, Gily B, et al. Anaphylactic shock during pediatric anesthesia: an unexpected reaction to sevoflurane. *Front Pediatr.* 2018;6:236. doi: 10.3389/fped.2018.00236