

## Anesthesia Induced Anaphylaxis: A Case Study

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### ABSTRACT

Anaphylaxis during anesthesia is a critical and potentially life-threatening event that can be triggered by various drugs used in the perioperative setting. Muscle relaxants, such as rocuronium, have been identified as one of the most common culprits responsible for anaphylactic reactions during anesthesia, accounting for a significant percentage of cases (Horiuchi et al., 2021). Additionally, NSAIDs like ketorolac can induce anaphylactoid reactions through mechanisms involving the inhibition of cyclo-oxygenase (COX)-1 iso-enzyme and subsequent release of mediators from mast cells and eosinophils.

In conclusion, anaphylaxis during anesthesia can be triggered by a variety of drugs used in the perioperative period. Prompt identification of the causative agent through immunoallergologic testing and effective management strategies, including the use of epinephrine and specific reversal agents like sugammadex, are essential in mitigating the potentially severe consequences of anaphylactic reactions during anesthesia.

**Keywords:** Anesthesia, Anaphylaxis, Propofol Adverse effects, Cardiomyopathy

### I. INTRODUCTION

Anaphylaxis, a severe and potentially life-threatening allergic reaction, can occur in response to various stimuli, including medications administered during anesthetic procedures. This case report describes the management of a patient who experienced anaphylaxis induced by anesthetic agents. Anaphylaxis during anaesthesia is a rare but potentially fatal event. While the typical presentation involves immediate hypersensitivity reactions, this case report presents a unique presentation of anaesthesia-induced anaphylaxis manifesting as delayed-onset stress cardiomyopathy. Propofol, a commonly used

anesthetic agent, has also been reported to cause anaphylaxis, with immunoallergologic testing confirming its role in IgE-mediated anaphylactic events. Furthermore, drugs like sugammadex, used for the reversal of neuromuscular blockade, have been associated with anaphylactic reactions during anesthesia, leading to manifestations such as hypotension and urticaria. An observational study conducted in Japan highlighted the diagnostic criteria for anaphylaxis during anesthesia, emphasizing the importance of clinical monitoring scoring systems and skin tests for confirmation. The management of anaphylaxis during anesthesia involves prompt recognition and treatment. Epinephrine is a crucial intervention in suspected cases of anaphylaxis, with a significant proportion of patients receiving this treatment during anesthesia-related allergic reactions. Sugammadex has emerged as a valuable agent in reversing rocuronium-induced anaphylactic shock, showcasing its efficacy in managing such critical situations.

### II. CASE REPORT

A 22-year-old female, Miss Sneha, presented to the emergency department with complaints of severe dysmenorrhea. On evaluation, she was found to have a left ovarian cyst and was subsequently scheduled for laparoscopic ovarian cystectomy.

During the procedure, the patient developed intraoperative hypotension, bronchospasm, and tachycardia following anaesthesia. This led to her transfer to the Intensive Care Unit (ICU) where she was intubated and initiated on supportive measures, including adrenaline and noradrenaline.

Initial investigations revealed normal urine analysis, negative COVID-19 antigen test, and clear chest auscultation. However, an

echocardiogram indicated a significant left ventricular systolic dysfunction with an ejection fraction (EF) of 40%, suggestive of stress cardiomyopathy.

The patient was closely monitored in the ICU and gradually weaned off inotropic support. A repeat echocardiogram on the fifth day showed improvement in left ventricular function with an EF of 45-50%. The patient's overall condition improved, and she was subsequently discharged. She was discharge with T.Corbis 1.25mg 0-0-1, T.Aldactone 25mg 1-0-0, T.Cardace 1.25mg 1-0-0 with follow up with certain tests

### III. DISCUSSION

While the direct trigger for the anaphylactic reaction in this case remains unclear, the subsequent development of stress cardiomyopathy is a noteworthy finding. Stress cardiomyopathy, also known as Takotsubo cardiomyopathy, is a temporary heart condition triggered by severe emotional or physical stress. It can mimic an acute coronary syndrome.

The association between anaesthesia-induced anaphylaxis and stress cardiomyopathy is not well established. However, the intense physiological stress associated with anaphylaxis could potentially trigger this condition. Anaesthesia-induced anaphylaxis is a rare but potentially fatal event. The most common causative agents include muscle relaxants, latex, and antibiotics.

Prompt recognition and management are crucial. The mainstay of treatment is rapid administration of epinephrine, oxygen, and intravenous fluids. Bronchodilators and antihistamines may also be beneficial.

Post-anaphylactic evaluation includes:

- \* Identification of the causative agent through skin prick tests or specific IgE testing
- \* Consideration of desensitization in certain cases.

Anaphylaxis during anesthesia can be triggered by a variety of drugs used in the perioperative period. Prompt identification of the causative agent through immunoallergologic testing and effective management strategies, including the use of epinephrine and specific reversal agents like sugammadex, are essential in mitigating the potentially severe consequences of anaphylactic reactions during anesthesia..

### IV. CONCLUSION

This case highlights the atypical presentation of anaesthesia-induced anaphylaxis. While the immediate management of anaphylaxis is crucial, long-term cardiac monitoring is essential to identify potential complications such as stress cardiomyopathy. Further research is warranted to elucidate the pathophysiological link between these two conditions. Anaesthesia-induced anaphylaxis is a medical emergency requiring immediate and coordinated response. Early recognition, rapid management, and subsequent investigation are essential for patient safety.

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### DECLARATION OF PATIENT CONSENT

Informed consent was obtained from the patient and his physician.

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### CONFLICTS OF INTEREST

There is no conflicts of interest.

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