

# Analysis of anaphylaxis and anaphylaxis-like reactions- a qualitative study

## Abstract

**Introduction:** Life threatening Anaphylaxis like reactions are becoming more and more common nowadays. A systematic review of such cases will throw more insight. Hence the study was taken to analyze the clinical profile of such reactions.

**Methodology:** Data available on the internet was collected on the case reports of Anaphylaxis. 15 case reports of Anaphylaxis caused by drugs and other agents were collected and analyzed.

**Results:** Most of the Drugs caused Anaphylaxis or anaphylactoid reactions. Two instances of Direct Cardiac Arrest (due to Thiamine and Atracurium) were found. Respiratory symptoms were absent in some Anaphylaxis reactions. Adrenaline infusion was needed for one patient. Diagnosis of Anaphylaxis was difficult in some patients due to drugs or disease mimicking the Anaphylaxis features. It was also difficult in anaesthesia Department because patient was under sedation. In some patients, there was Lag period for onset of Anaphylaxis. In other patient symptoms were gastrointestinal in nature. In two case reports Anaphylaxis occurred not in first dose but in subsequent Dose. Maternal Anaphylaxis was reported in one case.

**Conclusion:** Anaphylaxis reaction may vary from mild form to severe cardiac arrest. Diagnostic difficulties can occur due to atypical presentation, concomitant drugs, co existing diseases etc. Prevention of Anaphylaxis can be done by taking complete history of Drug allergies, Use of skin test and identification of High risk Patients. Maternal Anaphylaxis should be given more attention to prevent Fetal Damage. So prompt reporting and continues monitoring of anaphylaxis and Anaphylaxis like reactions are needed to take preventive actions.

**Keywords:** anaphylaxis, anaphylactoid reaction, pharmacovigilance, predictability, medical literature

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## Introduction

Fatal or near fatal or life threatening anaphylaxis and anaphylaxis-like reactions are becoming more and more common nowadays. This is a matter of growing concern both for patients and doctors. A systematic review of such cases reported in the literature, if carried out periodically, will throw more insight on such adverse drug effects. As a regional pharmacovigilance centre, we came across many such adverse drug effects. This made us ponder upon the incidence and preventability or predictability of this perennial medical problem leading us to a study on such case reports reported in the medical literature.

## Methodology

Data's over the internet was searched for case reports on anaphylaxis and anaphylaxis-like reactions. Detailed study of these case reports was undertaken to find out the preventability or predictability of these serious reactions.

## Results

From the Case reports Studied, following Drugs and other Agents Caused Anaphylaxis and Anaphylaxis reactions? Given in Table 1. In the Previously reported studies, anaphylaxis-like reactions varied from mild to severe category, the extreme case being a direct cardiac arrest.

Respiratory symptoms were absent in some anaphylaxis events.<sup>1</sup> Most of the patients received standard treatment for anaphylaxis. Some patients needed continuous infusion of adrenaline as a life-saving measure.<sup>1</sup> When many drugs are involved, it is difficult to identify the causative agent for anaphylaxis. Hence, prevention of anaphylaxis in that particular patient becomes difficult. Hence, number of drugs has to be kept to a minimum in every patient. In anaesthesia practice, this is not easy, if drugs are given separately and with an interval, it will help in identifying the particular drug causing the anaphylaxis reaction.<sup>2</sup>

At times, diagnosis of anaphylaxis itself may be difficult, especially when the patient is suffering from diseases or drugs mimicking the features of anaphylaxis.<sup>3</sup> Vasovagal reactions and flushing episodes are commonly confused with anaphylactic reactions.<sup>2</sup> Perioperative anaphylaxis is difficult to diagnose as the patient is sedated and not able to tell his symptoms.<sup>4</sup> It is also difficult because it occurs in the presence of multiple drugs. In some patients, onset of anaphylaxis may happen after considerable lag period leading to diagnostic delay or missing the diagnosis.<sup>5</sup> In some patients, when the predominant symptoms of anaphylaxis are gastrointestinal, anaphylaxis may not at all be recognized.<sup>6</sup> In yet another difficult event, a patient showed anaphylactoid reaction and died after intravenous radio contrast though he had undergone CT scans with contrast three times in the past.<sup>7</sup> Similarly, anaphylaxis occurred during the fifth dose of vitamin

B12.<sup>8</sup> From these results, it is clear that subsequent doses can also cause anaphylaxis and not necessarily the first dose.

**Table 1** Drugs and other agents causing anaphylaxis reactions

Drug/agent involved	Reaction reported
Propofol	Anaphylaxis
Ceftriaxone	Anaphylaxis
Steroids	Anaphylactoid reaction
Thiamine	Anaphylactic shock and cardiac arrest
Atracurium	Cardiac arrest
Betalactam antimicrobial agents	anaphylaxis
Palonosetron	Anaphylaxis
Vitamin B 12	Anaphylaxis
Ranitidine	Anaphylaxis
Streptokinase	Anaphylaxis
Radio contrast	Anaphylactoid reaction and death
Chlorhexidine	Near anaphylactic reaction
Latex, egg, soya and food items	Anaphylaxis
Autologous peripheral blood progenitor cell infusion	Anaphylaxis

## Prevention of anaphylaxis

Skin tests before the actual drug administration may give positive response and help clinicians avoid the drugs in a sensitive patient and prevent anaphylaxis. But, skin tests are also not completely reliable. False negative tests are to be kept in mind. Otherwise, unexpected anaphylaxis will occur suddenly. Doses in high risk drugs or patients can be given in a gradual manner.<sup>2</sup> Past history of any type of allergy can make the clinician more alert and help in preventing such severe reactions. Hence, there is always a need for taking a complete past history. Topical use of some drugs can sensitize the patient for future anaphylaxis. We came across a case report about chlorhexidine causing anaphylaxis reaction. When anaphylactic reactions occur due to the use of chlorhexidine, it makes one to think about withdrawing chlorhexidine preparations used for mucous membranes.<sup>9</sup> This approach may be extended to other topical preparations too, especially the topical use of antimicrobials. Mapping the profile of patients who may be at risk for anaphylaxis will be useful in prevention. This may need complete past history of allergies. At times, patients showing some disease conditions may be especially prone for anaphylaxis. For example, maternal anaphylaxis in a case report showed the medical history of atopic dermatitis.<sup>10</sup> In these patients, a strong immunological basis exists for the likelihood of anaphylaxis. For example: asthma in a patient may show that he is at risk for anaphylaxis also.<sup>2</sup> This applies to some patients who may be having genetic reasons for anaphylaxis. Some patients give a clear history of allergy to food items. They are at high risk for anaphylaxis.<sup>11</sup> In perioperative anaphylaxis events, anaesthesiologist and immunologist have to work together for definitive diagnosis and taking precautions during future anaesthetic procedures.<sup>3</sup> Complete work up of the patient to identify the causative agent for every anaphylaxis event has to be done even at a later stage after recovery. This will help avoid recurrence of anaphylaxis. Despite all the precautions, anaphylaxis can still occur. Hence, in general,

when any drug is given in a hospital, facilities for treating anaphylaxis should be available.<sup>12</sup> At the same time, parenteral administration of drugs must be done only when alternate routes are not available. Even this has to be done with all due precautions besides getting informed consents from patients. Maternal anaphylaxis is a clinical entity that is not discussed often. When maternal anaphylaxis occurs, it puts fetus at risk. This can also occur after some food items too.<sup>10</sup> Hence, maternal care protocols must include diet advice too.

## Discussion

Data on epidemiology of anaphylaxis is limited and may be due to under reporting. This shows that there is increased need for Pharmacovigilance activities in every Hospital.<sup>2</sup> Reporting culture among the clinicians especially for reporting anaphylaxis reactions should be cultivated. Medical students have to be contacted during their course period to sensitize them so that they would develop the habit of reporting any adverse reaction they would come across in their practice.

## Conclusion

Critical analysis of case reports of anaphylaxis shows that anaphylaxis reactions may range from mild forms to severe cardiac arrest. Some patients may present with atypical clinical picture of anaphylaxis. Diagnostic difficulties can occur due to co-existing diseases or concomitant drugs having their own allergic reactions. Prevention of anaphylaxis by adequate history taking about drug allergies, use of skin tests etc should be given top priority. Identifying patients who are at risk for anaphylaxis is yet another step towards prevention. As per the case reports analysed, it is obvious that anaphylaxis can occur in subsequent dosing also and not during the first dose alone. Maternal anaphylaxis, patients with history of allergy to food items or drugs and anaphylaxis occurring during anaesthesia require special attention from the clinicians. Continuous monitoring of the incidence of anaphylaxis and its prevention aspects should be the top priority for all health workers.

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## Conflict of interest

The author declares no conflict of interest.

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