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Case Report

Lidocaine-induced anaphylactic shock – A case report

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ABSTRACT

IgE-mediated hypersensitivity reactions (HRs) to local anaesthetics are extremely uncommon. One of the most widely used local anaesthetics for minor dental and other surgical procedures is lidocaine. The incidence of anaphylactic reaction by Inj. Lidocaine among global population is <1%. The first anaphylactic reaction reported in 1902. A 69-year-old female patient shifted to community hospital emergency department. She presented with complaints of vertigo, anxiety, tachypnoea, hypoxia, and sudden onset of breathlessness. History revealed on administration of Inj. Lidocaine a local anaesthesia to her before knee surgery developed above-mentioned symptoms after 15 minutes. After receiving her from OT patient vitals observed as pulse rate-97bpm, GRBS-140mg/dl, blood pressure-170/70mmHg, spo_2 _95% with 0_2. On emergency basis treated her with anti-histamines (Inj. Chlorpheniramine), steroids (Inj. Hydrocortisone-400mg, Inj.solumedrol-1gm), oxygen support of 7 to 8 lit/min, after 4 days she recovered completely and discharged. We used a scale (Naranjo scale) to evaluate the severity of the adverse drug reaction as per scale, score was five that indicates probability of happening adverse reaction. We conclude the case as anaphylactic reaction to lidocaine could have been cause of the event. It is important to collect patients complete past medical history and their allergic history. Also by giving importance to drug sensitivity testing at least to the list of drugs that are reported to show allergic reactions or anaphylactic reactions in post marketing surveillance. Optimised management protocols can save both the patient life and dilemma faced by physicians.

1. Introduction

Anaphylaxis is the potentially life-threatening allergic reaction that to be monitored promptly and managed immediately. The diagnosis of anaphylaxis based on the history and clinical symptoms involving 2 or more organ systems, including the skin or mucous membranes, the respiratory system, the gastrointestinal system, and the cardiovascular system.[1] Globally, the incidence of anaphylaxis and its related hospitalisation rate have increased. In recent years, with children and elderly age groups being at a disadvantage, there has been a disproportionately increased risk of hospitalisation and emergency department (ED) visits.[2] The class I-b anti-dysrhythmic and local amino-amide based anaesthetic xylocaine, also known as lignocaine, has been available for purchase since 1948.[3] Lidocaine generally used like injection, inhalation and topical agent as anaesthesia. Though it can be used for various purposes in various forms to the patients, however, care must be taken on dose parameters and it's systemic reach as per dose administered, because lidocaine toxicity is not only depended on total dose

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but also on rate of absorption that is dependent on blood flow to particular targeted organ.[4,5]

2. Presentation of Case

A 69-year-old female patient shifted to community hospital emergency department. She presented with complaints of vertigo, anxiety, tachypnoea, hypoxia, and sudden onset of breathlessness.

Her past medical history revealed that she diagnosed with osteoarthritis and scheduled for left knee surgery. Upon arrival in the preparation room for surgery, Inj. lidocaine administered. Within 15 to 20 min, she developed hypoxia and sudden onset of breathlessness (spo_2 levels noticed as 78%)as a need of emergency connected to oxygen support of 7 to 8 lit/min and shifted.

On arrival from OT to ICU, patient vitals observed as pulse rate-97bpm, GRBS-140mg/dl, blood pressure-170/70mmHg, spo_2 _95% with 0_2, temperature normal, pedal oedema- +, CVS- s_1s_2 +, carotid pulse, femoral pulse, are normal. Motor response obeyed on command, best verbal response were oriented. Patient managed with Inj. Chlorpheniramine, a first generation alkyl-amine antihistamine drug injected intravenously, Inj. Hydrocortisone-400mg intravenously and Inj.solumedrol-1gm administered.

When we monitored closely her medical condition slowly recovered, she had no previous history of allergies and known case of type-2 diabetes, hypertension since 20years. Surgical history includes PTCA (Percutaneous Transluminal Coronary Angioplasty) done 5 years back. After 4days patient recovered completely, and she was hemodynamically, stable and discharged. According to Naranjo adverse drug reaction probability scale, score according to scale is five that is considered as probable and life threatening allergic reaction.

Table 1: Naranjo adverse drug reaction probability scale

	Questions	Yes	No	Don't know	Score
1	Are there previous conclusive reports on this reaction?	+1	0	0	+1
2	Did the adverse event appear after the suspected drug was administered?	+2	-1	0	+2
3	Did the adverse reaction improve when the drug was discontinued or a specific antagonist was administered?	+1	0	0	+1
4	Did the adverse event reappear when the drug was re-administered?	+2	-1	0	0
5	Are there alternative causes (other than the drug) that could on their own have caused the reaction?	-1	+2	0	0
6	Did the reaction reappear when a placebo was given?	-1	0	0	0
7	Was the drug detected in blood (or other fluids) in concentrations known to be toxic?	+1	0	0	0
8	Was the reaction more severe when the dose was increased or less severe when the dose was decreased?	+1	0	0	0
9	Did the patient have a similar reaction to the same or similar drugs in any previous exposure?	+1	0	0	0
10	Was the adverse event confirmed by any objective evidence?	+1	0	0	+1

The adverse drug reaction assigned to a probability category from the total score as follows
Definite: >8; Probable: 5 to 8; Possible: 1 to 4; Doubtful: <1

3. Discussion

A severe, life-threatening systemic hypersensitivity reaction is anaphylaxis. One or more organ systems, such as the skin, cardiovascular, respiratory, and gastrointestinal systems affected by these medications.[1] Local anaesthesia overdose or accidental intravenous administration can also result in toxic side effects like dizziness, myospasm, diplopia, bradycardia, decreased cardiac output, and seizures.[6] After administration of local anaesthesia, if the patient presented with symptoms like sudden onset of hypertension, tachycardia, dyspnoea, or dermal lesions may indicate an allergic reaction to the anaesthesia. However, unfavourable outcomes may result from a lack of emergency preparedness in this circumstance, such as the absence of pre-procedural testing and a review of emergency management procedures. In a condition like tachycardia, severe hypotension, shock, effective circulatory volume (bleeding) may decrease. Careful clinical assessment and ongoing monitoring are essential for preventing additional mortality and morbidity.[7,8] The time gap between the onset of anaphylaxis and the beginning of treatment and reanimation procedures significantly reduced when a diagnosis made promptly.[9] Rare case of unforeseen tragic event of severe anaphylactic reaction to lidocaine in a paediatric patient in rural low resource setup. One of the study suggests that any anaesthetic drug sensitivity could not be assessed based on past experiences, Inj. xylocaine (undiluted 0.1 ml) was tested for drug sensitivity intra-dermally four hours before the planned surgery, and it came back negative. Despite the negative results of the sensitivity test, the patient went into anaphylactic

shock and cardiorespiratory arrest shortly after receiving the medication.[10] As few studies determined that risk of anaphylaxis increases with age and gender i.e, woman are at higher risk when compared to the men. Increase in age is also one of the risk factor for anaphylaxis.

4. Conclusion

Before starting of any treatment regimens, giving importance to drug sensitivity testing, knowing patients complete past medical history, their respective allergic patterns to any drug in their past will help the clinicians for choosing better alternative way to overcome respective clinical scenario's because it is always better to prevent rather than cure.

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6. Conflict of Interest

None.

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