

Lidocaine-Induced Anaphylactic Shock – A Case Report

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ABSTRACT

Introduction: 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 was reported in 1902. **Case presentation:** 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 reveals upon arrival in the preparation for knee surgery, Inj. Lidocaine administered within 15 minutes she developed symptoms. Treated with anti-histamines and steroids. We diagnose the case as anaphylactic reaction to lidocaine could have been cause of the event. **Conclusion:** It is important to collect patients complete past medical history and their allergic history. Also by giving importance to drug sensitivity testing, and management protocols can save both the patient life and dilemma faced by physicians.

Keywords: Anaphylaxis, Local anaesthetics, Lidocaine.

I. INTRODUCTION

Anaphylaxis is the extreme form of an allergy. It is an acute, potentially life-threatening allergic reaction that should be recognised promptly and managed immediately. The diagnosis of anaphylaxis is based on the history and clinical symptoms involving two 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⁾. An accidental intravascular injection of xylocaine, primarily into the neck, during regional anaesthesia results in severe cardiotoxicity, including hypotension, atrioventricular heart block, idioventricular rhythms, and life-threatening arrhythmias like ventricular tachycardia and fibrillation, which are typically the initial signs of LA toxicity ⁽⁴⁾.

Presentation of case:

On January 18, 2023; 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 reveals that she is diagnosed with osteoarthritis and scheduled for left knee surgery. On the day of surgery, her physical examination and diagnostics all were within normal limits. Upon arrival in the preparation room for surgery, Inj. lidocaine administered. Within 15 to 20min she developed hypoxia and sudden onset of breathlessness. Immediately connected to oxygen support of 7 to 8 lit/min and shifted.

On arrival physical examination reveals, pulse rate-97bpm, grbs-140mg/dl, blood pressure-170/70mmHg, spo₂95% with O₂, temperature normal, pedal oedema- +, CVS- s₁s₂ +, carotid pulse, femoral pulse, pedal pulse, radial pulse, posterior tibial pulse are normal. Eyes were spontaneous, best motor response were obeyed on command, best verbal response were oriented. Patient was managed with Inj. Chlorpheniramine, a first generation alkyl-amine anti-histamine drug was injected intravenously, Inj. Hydrocortisone-400mg intravenously and Inj. solumedrol-1gm also administered.

When we monitored closely her medical condition slowly got 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) that was done in 2018. We diagnosed the case as anaphylactic reaction to lidocaine could have been the cause of the event. After 4days patient was recovered

completely and she was hemodynamically stable and got discharged. According to Naranjo adverse drug reaction probability scale, score according to scale is 6 which is considered to be possible and life threatening.

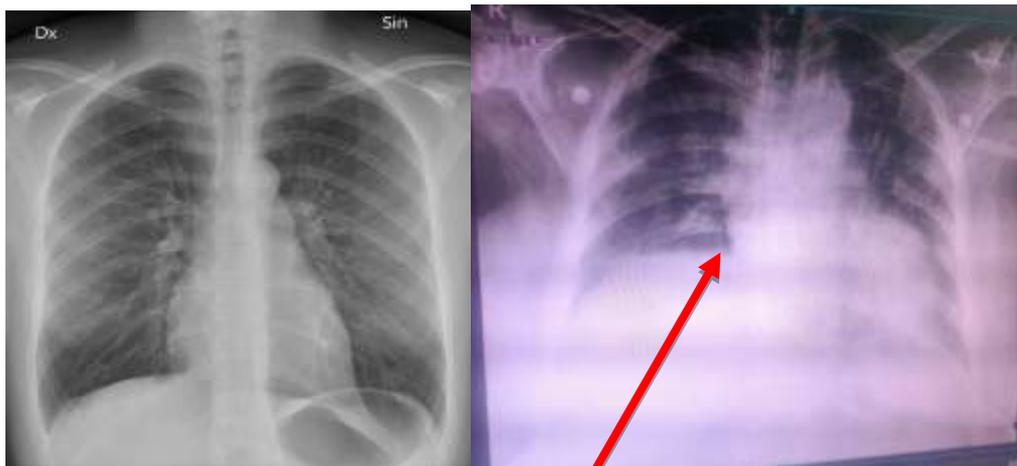


Figure 1. Normal X-Ray Figure 2. Patient effected Anaphylactic shock by Administration of lidocaine Injection

II. DISCUSSION

A severe, life-threatening systemic hypersensitivity reaction is anaphylaxis. One or more organ systems, such as the skin, cardiovascular, respiratory, and gastrointestinal systems, can be affected by these medications⁽⁵⁾. The immune-mediated (Ig-E-mediated, anaphylactic) and nonimmune-mediated (chemically-mediated, anaphylactic) mechanisms that lead to mast cell degranulation can be separated. Non-Ig-E-mediated allergic reactions appear to have more isolated skin symptoms, whereas Ig-E-mediated allergic reactions appear to have more bronchial spasm and cardiovascular symptoms⁽⁶⁾. Local anesthesia overdose or accidental intravenous administration can also result in toxic side effects like dizziness, myospasm, diplopia, bradycardia, decreased cardiac output, and seizures⁽⁷⁾. After administration of local anesthesia, if the patient presented with symptoms like sudden onset of hypertension, tachycardia, dyspnea, or dermal lesions may indicate an allergic reaction to the anesthesia. However, unfavorable 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⁽⁸⁾. The time gap between the onset of anaphylaxis and the beginning of treatment and reanimation procedures is significantly reduced when a diagnosis is made promptly⁽⁹⁾. By Vishal R Harngulkaret.al., Any anaesthetic drug sensitivity could not be assessed based on past experience. Inj. xylocaine (undiluted 0.1 ml) was tested for drug sensitivity intradermally 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⁾. A chest x-ray of respective patient revealed the impressions: cardiomegaly, dominance of the left ventricle, unfolding of the aorta, and mild haziness in both the lower zone in the chest portable view and Fig. 2. As few studies determined that risk of anaphylaxis increases with age and gender i.e., women are at higher risk when compared to the men. Increase in age is also one of the risk factor for anaphylaxis.

III. CONCLUSION

In conclusion, it is essential for all medical professionals and paramedics to be aware of the

acute and life-threatening nature of anaphylaxis as well as how to treat it. In an event of a rare encounter like anaphylaxis, clinicians must have adequate knowledge about its diagnosis and know precise practice protocols while handling clinical scenario's accordingly. Also by giving significance to history i.e., before starting of any treatment regimens, 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. Also by giving importance to drug sensitivity testing, and management protocols can save both the patient's life and the dilemma faced by physicians.

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