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Case Series

Hypersensitivity Reaction Induced by Lignocaine Hydrochloride: A Case Series

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Abstract:

Lignocaine Hydrochloride is the preferred anaesthetic agent used in surgical procedures. Hypersensitivity reactions are exaggerated immunologic reaction occurring in response to exogenous and endogenous substances. Triple Response is an immediate type Hypersensitivity reaction having cutaneous response due to release of histamine which is a dibasic vasoactive amine located in skin and other body tissues Suspected ADRs due to Lignocaine Hydrochloride were reported from Obstetrics and Gynaecology Dept. The ADRs were filled in Suspected ADR reporting form and as per WHO-UMC causality assessment scale causality was assessment was done and ADRs were reported through vigiflow to Indian Pharmacopeia commission, Ghaziabad. A case series of hypersensitivity reaction due Lignocaine Hydrochloride is presented. First one is 40-year-old-female admitted for Vaginal hysterectomy with perineal floor repair under surface anaesthesia. Second one is 24 -year- old female admitted for Tubal Ligation under surface anaesthesia and third one is 21 -year- old female admitted for resuturing of incision site under surface anaesthesia. All these patients experienced triple response after the injection was given.It is important for practitioners to be aware that allergic reactions though very rare, can occur after injection of lignocaine intradermally for allergy testing. A proper diagnosis and management of such allergic reaction is very essential to avoid undesired consequences. `

Keywords: Hypersensitivity, Lignocaine Hydrochloride, Triple Response.

Introduction

Local Anesthetics are drugs that block nerve conduction when applied locally to nerve tissue in appropriate concentrations. Their action is completely reversible. They act on every type of nerve fibre and cause both sensory and motor paralysis in the innervated area[1]..They are usually 1differentiated by their chemical structure, specifically the linkage between the compound's common components, such as amide and esters [2]. Lidocaine, also called as lignocaine, is a class Ibantidysarrhythmic and local amino amide-based anesthetic that has been on the market since 1948 [3,4].

Quickly because of its superior safety profile it gained popularity. It can also be used to treat acute and chronic pain as an adjuvant analgesic [5,6]. It use is to relieve pain during a minor surgery or invasive procedures such as biopsies, minor excisions, or dental surgery. It can be used through different routes, i.e., by injection, inhalation, or as a topical agent to provide anesthesia to the same patients, so total dose given to patients must be recorded to avoid its systemic toxicity. Lidocaine should not be used in patients with confirmed allergic hypersensitivity. Antigen Sensitivity testing must be done before administration of lidocaine. The incidence of allergic contact dermatitis (ACD) to LA is rising because of increase in over the counter Amide based local Anesthetic such as Lidocaine[7]. Despite the fact that allergic reactions to lidocaine are quite rare, but it does occur [8]. The incidence of true allergies to Lidocaine accepted by researchersis below 1%.Therefore practitioners must be trained and educated properly in order to manage and diagnose a true LA allergic reaction and practice of Antigen Sensitivity testing before higher dose administration.[9]

Case Presentation: Here we present a case series of lidcaine-induced hypersensitivity reaction during Antigen Sensitivity testing after taking consent from patient.

Patient 1

A 40-Year old patient presented in obstetrics and gynaecology department with secondary UV prolapse admitted for vaginal Hysterectomy with perineal floor repair under surface anesthesia. Patient is a known case of P3L3A3. Patient was tested for Xylocaine sensitivity testing for which she was given 0.5 ml Intradermal injection in right forearm (ventral aspect in evening) on 5/09/2022 and patient developed Redness, wheal and flare (Triple response) for which patient was managed symptomatically. On examination patient was conscious, well oriented to time, place and person and in stable condition and routine laboratory investigations were normal. There was no history of any drug allergy and no other drugs were taken concomitantly. On the basis of clinical finding and patient was diagnosed having sensitivity to xylocaine during sensitivity testing.

Fig 1: Triple response over left forearm

Patient 2

A 24-year old Female patient presented in obstetrics and gynecology department for tubal ligation under surface anesthesia for which antigen sensitivity testing with xylocaine 0.5 ml Intradermal injection in right forearm (ventral aspect in evening) on 5/09/2022 and patient developed Redness, wheal, flare and patient was managed symptomatically. On examination patient was conscious, well oriented to time, place and person and in stable condition and routine laboratory investigations were normal. There was no history of any drug allergy and no other drugs were taken concomitantly. On the basis of clinical finding and patient was diagnosed having sensitivity to xylocaine during sensitivity testing.

Patient 3

A 21-year old Female patient presented in obstetric and gynaecology department for pus discharge from suture site along with case of fever. She was a follow-up case of LSCS done on 24/08/2022. Patient was admitted on 2/9/2022 for plan of resuturing after stabilization. Antigen sensitivity testing with xylocaine 0.5 ml Intradermal injection on right forearm on 5/09/2022 and patient developed Redness, wheal, flare and patient was managed symptomatically. On examination patient was conscious, well oriented to time, place and person and in stable condition. Haemoglobin value was 10.9 mg/dl, TLC count was 9700cells, Blood pressure was 136/80mmHg, There was no history of any drug allergy and no other drugs were taken concomitantly. On the basis of clinical finding and patient was diagnosed having sensitivity to xylocaine during sensitivity testing.

Figure 2: Triple response over left forearm

The ADRs due to antigen sensitivity testing of Xylocaine occurred on 5/09/2022. Thus the above mentioned cases have strong temporal association to Xylocaine sensitivity testing. However rechallenge is not justified in this case due to ethical constraints and fatal outcomes. This adverse reaction is not dose related .It can be considered as Probable/likely adverse drug reaction as per Who

UMC causality assessment scale of suspected adverse reaction.

Discussion

If histamine is injected intradermally or when the skin is exposed to a physical trauma a triple response will be elicited is due to the release of histamine. That consists of: 1.Red spot: due to capillary dilatation 2.Flare: redness (extend about 1cm)caused by axon reflex 3.Edema(Wheal) : due to exudation of fluid from capillaries and venule(capillary permeability). According to D Kossintseva I *et.al. t*he ACD to LA is common, with an incidence of 2.4%, in which 32% of cases are linked to lidocaine [7]**.** As per Janas-Naze A et.al a study done on 100 general dentist practioner revealed that the incidence of lidocaine allergy in 17 subjects out of 100 dentists , in which type I hypersensitivity was diagnosed in 13 cases, and 4 subjects had an IgE-independent allergy [10]Antoine et al. reported sixteen cases of allergy contact dermatitis and delayed hypersensitivity to lidocaine [11].In our case series all the three patients during Antigen Sensitivity testing showed Redness, Wheal and flare (Triple response) which is rare but known adverse reaction due to Lidocaine. Therefore our,idea is to create awareness about the rare but important drug reaction to lidocaine. Hence Antigen sensitivity testing must be done prior to introducing local anesthesia to patients.

Conclusion

The nature of anaesthetic practice is such that exposure to risk is inordinately high. Adequate knowledge and experience, proper perioperative assessment of the patient, are necessary to decrease the incidence of ADRs in anaesthesia. Anaphylaxis is the most serious ADR and can be life threatening. Prevention, management, documentation, appropriate labelling of the patient and critical incident reporting should be encouraged in anaesthesia practice to improve patient safety and decrease morbidity and mortality.

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Authors contribution

Bhavana Srivastava, Neeraj Rajdan, Kunal Sharma and Kalpana Joshi contributed in writing the manuscripts whereas Bhawna Virak provided the particulars and details of the patient.

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