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# Case Report on Liposomal Doxorubicin Induced Anaphylaxis

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ABSTRACT

Objective: To report a case of liposomal doxorubicin induced anaphylaxis.

Case Summary: A 43 year old female patient with metastatic carcinoma of endometrium was admitted to the hospital with chief complaints of abdominal pain, distention and vomiting. Due to the disease progression she was planned for chemotherapy with liposomal doxorubicin. But she developed anaphylactic reaction in the 1st dose and drug was stopped. Therapy was discontinued and she got recovered.

Discussion: Liposomal doxorubicin is a formulation of doxorubicin packed in a liposome with a polyethylene glycol covering. The anaphylaxis occurred may be due to the surface component of the liposome itself and not due to the actual drug. The mechanism of reaction is probably due to complement activation.

Conclusion: Anaphylaxis is a serious, sometimes life threatening condition which may require immediate intensive care support. Pre-treatment with diphenhydramine, dexamethasone and famotidine is found to be useful following liposomal doxorubicin infusion. Sometimes chemotherapy needs to be discontinued to avoid risk for patients.

Key words:
Anaphylaxis, Liposomal Doxorubicin, Metastatic Carcinoma, Abdominal Pain, Life Threatening Condition.

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## INTRODUCTION

Anaphylaxis is an acute, potentially fatal, multi-organ system reaction caused by the release of chemical mediators from mast cells and basophils. It is an unexpected and non-dose related ADR most commonly affecting the cutaneous, respiratory, cardiovascular and GI system that requires immediate recognition and intervention[1]. Disposition of patients with anaphylaxis depends on severity of the initial reaction and the response to the treatment[2]. Here we present the case of a patient with a possible adverse drug reaction of liposomal doxorubicin, who had developed anaphylaxis after the initiation of treatment and had no any past history of such reaction[3].

## CASE REPORT

A 43 year old female patient who is a known case of metastatic carcinoma endometrium was admitted to the hospital on 04/01/2020 for complaints of abdominal pain, distention and vomiting since one week. Patient had a history of total abdominal hysterectomy with bilateral salpigo oophorectomy on 18/07/2018. She developed abdominal wall recurrence in February 2019 and took 6 cycles of chemotherapy with paclitaxel and carboplatin. She completed adjuvant radiotherapy and brachytherapy by October 2019. She was found to have Lynch syndrome (heterozygous variant MLH gene mutation positive) and due to disease progression she was on immunotherapy of pembrolizumab, 7 cycles till December 2019. On admission her CT report shows increased abdominal lesions. She was started on IV fluids and IV antibiotics (Inj.Cefotaxim 1g bid). She was planned for chemotherapy with LIPODOX 600 mg in 250ml 5% dextrose IV over 30 minutes and was premedicated with Inj. Dexamethasone 8 mg IV bolus and Inj. Palonosetron 0.25 mg IV bolus both on day 1. Lipodox chemotherapy was started at 2 pm on 09/01/2020 and after 2 minutes of 1st infusion she developed anaphylactic reaction (chest discomfort, breathing difficulty, back pain and flushing, Blood pressure 130/80) and chemotherapy was stopped. Her adjunct management was done using Inj.Hydrocortisone 100 mg IV stat, Inj.Avil 1 ampule and oxygen inhalation. ECG showed 1st degree AV block , septal and lateral T wave abnormality.Her ECG on 10/01/2020 showed good LV systolic function and was planned for next line adreamycin (90mg) - cyclophosphamide (900mg) regimen chemo therapy. 1st cycle AC regimen was administered on 10/01/2020 which was well toleratedand she was discharged on 11/01/2020 in a stable state.

## DISCUSSION AND CONCLUSION

Liposomal doxorubicin is a formulation of doxorubicin in which the molecule itself is packaged in a liposome made of various lipids with an outer covering of polyethylene glycol. The common toxicities of liposomal doxorubicin are palmar-plantar erythrodysesthesia, myelosupression, stomatitis and cardiac toxicity. But serious sometimes life threatening infusion related reactions reported. This will be characterised by flushing, facial edema, head ache, back pain, rigors, hypotension, chest /throat tightness and dyspnoea. A similar case of anaphylactic reaction to liposomal doxorubicin was reported in a study by L.R Sharma et al. This hypersensitivity reaction is seen in 6.8% of patients and it mostly occurs during

their first administration. This differs from the classic hypersensitivity reaction, which is occurring only after previous exposure to the allergen. To overcome this, pre-treatment with diphenhydramine, dexamethasone and famotidine is found to be useful following liposomal doxorubicin over 2 hour infusion. If no infusion reaction occurs, subsequent doses can be given over 1 hour without treatment. Usually hypersensitivity reactions will not be seen in subsequent doses, if it does not occur in the initial dosing. If a reaction does occur it can be managed by discontinuing the infusion until symptom resolves. Studies postulated that hypersensitivity reaction is due to the surface component of the liposome itself and not the actual drug. The mechanism of anaphylactic reaction is probably due to complement activation and not IgE mediated (type 1) allergy.

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**CONFLICT OF INTEREST**: Nil

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