

# Anaphylaxis to Pegylated Liposomal Doxorubicin: A Case Report

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## ABSTRACT

*Liposomal doxorubicin is used for the treatment of various cancers like epithelial ovarian cancers, multiple myeloma and sarcomas. We report the first case of anaphylaxis to pegylated liposomal doxorubicin.*

**Keywords:** Anaphylaxis, doxorubicin, liposomes

# Anafilaxia a la Doxorubicina Liposomal Pegilada: Reporte de un Caso

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## RESUMEN

*La doxorubicina liposomal se utiliza para el tratamiento de varios tipos de cáncer como el cáncer de ovario epitelial, el mieloma múltiple y los sarcomas. Reportamos el primer caso de anafilaxia a la doxorubicina liposomal pegilada.*

**Palabras claves:** Anafilaxia, doxorubicina, liposomas

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## INTRODUCTION

Anaphylaxis is a clinical diagnosis and is an unexpected, non-dose related adverse drug reaction (1). We describe the first reported case of anaphylaxis to liposomal doxorubicin.

## CASE REPORT

A 69-year old female with metastatic primary pulmonary monophasic synovial sarcoma presented for the first cycle of chemotherapy. She denied any chest pain, shortness of breath, cough or palpitations. Her past medical history included hypertension, hypercholesterolaemia, hypertriglyceridaemia, diabetes mellitus, parkinsonism, osteopaenia, gastroesophageal reflux disease, bipolar disorder, glaucoma and arthritis of the hip joint. Her surgical history included laparoscopy, hysterectomy, carpal tunnel release, aortoileo-femoral bypass graft, aortic valve replacement and laminectomies. Her home medications included risedronate (Actonel®), levodopa-carbidopa, bisoprolol, losartan (Cozaar®), rosuvastatin (Crestor®), fenofibrate, gabapentin, potassium citrate, methocarbamol, nystatin drops for oral thrush, warfarin, omeprazole, paroxetine, tramadol, olanza-

pine (Zyprexa®), coenzyme Q, calcium, multivitamins and senna. She was allergic to bacitracin, morphine, neomycin, polymyxin B, sodium/benzoate, tetracycline, clavulanic acid, cephalosporin and penicillin.

On physical examination, her temperature was 98 °F, pulse 83/minute, respiratory rate 18/minute, blood pressure 122/55 mmHg; oxygen saturation was 93% on room air and her weight was 130 lbs. Systemic examination revealed tremors that were related to parkinsonism. Laboratory data showed normal blood counts and normal liver and renal function. The patient was prescribed single agent chemotherapy with liposomal doxorubicin at the dose of 50 mg/m<sup>2</sup> every four weeks.

Prior to the administration of the first dose of chemotherapy, she was premedicated with 20 mg of dexamethasone. Twelve minutes after starting the infusion, the patient developed shortness of breath, flushing, feeling warm and dizziness. Her blood pressure increased to 178/75 mmHg, pulse was 74 beats/minute, respiratory rate was 20 breaths/minute and oxygen saturation on room air was 90%. The infusion was discontinued and she was given oxygen *via* nasal cannula at a rate of two litres per minute, a bolus of 5% dextrose, dexamethasone 20 mg and diphenhydramine 50 mg intravenously. The patient's condition improved over the next 40 minutes and she was discharged in a stable condition.

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## DISCUSSION

Pegylated liposomal doxorubicin (Doxil<sup>®</sup>, Caelyx<sup>®</sup>) is a formulation of doxorubicin in poly (ethylene glycol)-coated (stealth) liposomes with a prolonged circulation time and unique toxicity profile (1). The common toxicities of liposomal doxorubicin include palmar-plantar erythrodysesthesia, myelosuppression, stomatitis and cardiac toxicity (2). Hypersensitivity reaction is not a common side effect of doxorubicin (3). However, in various studies using liposomal doxorubicin, 4–7.1% of the patients developed infusion related reactions (2, 4). Up to 45% of patients who receive the drug without premedication with steroids and antihistamines develop moderate to serious hypersensitivity reactions (3). It has been postulated that serious hypersensitivity reaction is due to the surface component of the liposome itself and not the actual drug. The mechanism of anaphylactoid reaction is probably due to complement activation and not IgE mediated (type I) allergy (5, 6). The reactions occur typically during the first infusion.

## CONCLUSIONS

To the best of our knowledge, this is the first reported case of anaphylaxis from liposomal doxorubicin. It is important for healthcare providers to be aware of this potentially fatal side effect. Early recognition and prompt intervention may prevent life-threatening complications.

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