

DOXORUBICIN INDUCED CARDIOTOXICITY IN PATIENTS WITH BREAST CANCER: A REPORT OF TWO CASES

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ABSTRACT:

Introduction: Breast cancer is one of the most common cancer diagnosed in women. It results as secondary cause of mortality of women. Early diagnosis and treatment of breast cancer help in prevention of breast cancer. Treatment involves chemotherapy followed by radiation therapy. Doxorubicin is the drug of choice in breast cancer which has the high risk of cardiotoxicity. **Case presentation:** In this case report the patient was presented with symptoms of mass in breast and axilla region, nipple discharge. Initially the patients were subjected to mastectomy and chemotherapy was initiated, later the patient was diagnosed With Abnormal 2D-ECHO (grade4 Left ventricular diastolic dysfunction, EF: 54). **Conclusion:** breast cancer if left untreated might lead to metastasis and cardiotoxicity should be monitored and treated immediately. If left untreated it may lead to congestive heart failure and results in death.

Keywords: Breast Cancer, Chemotherapy, Doxorubicin, Cardiotoxicity.

INTRODUCTION: Breast cancer is the most common cause of mortality. Breast cancer is the metastatic cancer and can commonly transfer to other organs like bone, lungs, liver, brain which may account for incurability [1]. In general, women are at more risk than men in occurrence. The risk factors include age, sex, family history, gene mutations, hormonal imbalances, unhealthy lifestyle and immune compromised patients [2]. The breast tumors usually start from ductal hyper proliferation and then develop into benign tumor or metastasis. Early diagnosis of breast cancer can lead to good prognosis. Physical examination is the primary identification method of breast cancer and PET, Mammography, cytopathology, histopathology are the widely used diagnostic method to identify the breast cancer [3]. Treatment include mastrectomy, then followed by chemotherapy and radiation therapy [4]. Doxorubicin is an anthracycline antibiotic which is one of the most effective antineoplastic drugs. Doxorubicin induced Cardiotoxicity is found to be the major complication in patients with breast cancer using doxorubicin. The mechanisms include oxidative stress, iron metabolism, Ca^{2+} homeostasis dysregulation, gene expression modulation and apoptosis, it could be identified by specific diagnostic procedures like 2d-ECHO, ECG, cardiac troponins [5].

CASE REPORTS:

Case presentation 1:

A 58years old female patient was admitted in the hospital with the chief complaints of lump in the right breast and nipple discharge. On physical examination the patient was moderately built, height-157cms, weight-60kgs, BSA-1.6, BMI-24.3. Previous medical history of patient includes include LSCS done 3 times (27years, 29years, 32years back) and hysterectomy was done. The patient was diabetic and hypertensive and on medication. Social history was found to be occasionally alcoholic (toddy) and family history shows the patient's mother was diagnosed with breast cancer and expired 5 years back. Physical examination: lump in

breast, nipple retraction, discharge from nipple. The laboratory investigations shows cytopathology reports: FNAC- invasive ductal cell carcinoma, histopathology: invasive ductal cell carcinoma, immunohistochemistry: ER-05, PR-08. The patient was planned for mastectomy, and chemotherapy includes ACP regimen (adriamycin- 60mg/m², cyclophosphamide- 600mg/m², paclitaxel- 175mg/m²) in which A,C was given for first four cycles i.e. each cycle lasting for 21 days, paclitaxel alone was given for the next four cycles. Inj. Ondansetron 2mg was given to treat nausea, vomiting. After each cycle CBP, Sr.Cr and 2d-ECHO was performed. After 3 cycles 2d-ECHO demonstrated grade-4 left ventricular diastolic dysfunction with EF-54% which indicates cardiotoxicity. CBP shows Hb-7gm% indicating anemia, alopecia and darkening of nails was observed due to chemotherapy. Later the patient was subjected to radiation therapy and patient has started recovery.

Case presentation 2:

A 42years old female patient was admitted in the hospital with the chief complaints of lump in the right breast and dimpling of breast. On physical examination the patient was moderately built, height-150cms, weight-45kgs, BSA-1.37, BMI-20. Previous medical history of patient includes include LSCS done 2 times and tubectomy was done. Social history was found to be occasionally alcoholic (toddy) and family history was not significant. physical examination: lump in breast, nipple retraction, discharge from nipple and dimpling. The laboratory investigations shows cytopathology reports: FNAC- invasive ductal cell carcinoma, histopathology: invasive ductal cell carcinoma, immunohistochemistry: ER-05, PR-07. The patient was planned for mastectomy, and chemotherapy includes FAC regimen (adriamycin- 60mg/m², cyclophosphamide- 600mg/m², 5-fluorouracil- 500mg/m²) was given for 6 cycles. Inj. Ondansetron 2mg was given to treat nausea, vomiting. After each cycle CBP, Sr.Cr and 2d-ECHO was performed. After 3 cycles 2d-ECHO demonstrated grade-2 left ventricular diastolic dysfunction with EF-55% which indicates cardiotoxicity. CBP shows Hb-9gm% indicating anemia, alopecia and darkening of nails was observed due to chemotherapy. Later the patient was subjected to radiation therapy and patient has started recovery.

DISCUSSION:

Cancer is found to be the major mortality causing disease in women. The combination of anthracyclins especially doxorubicin with cyclophosphamide is a standard adjuvant therapy for early stage breast cancer which significantly improves the overall survival of patient particularly when given in sequential with paclitaxel [6]. Anthracycline containing chemotherapy not only makes the patient disease free but also but also helps in overall survival in breast cancer patients but they are also cardiotoxic [7]. Doxorubicin has been most commonly used anthracycline in the treatment of breast cancer although it has cardiotoxic effects

CONCLUSION:

As the cancer is found to be the most common disease now-a-days the treatment pattern and dosing differs from patient to patient based on the age, height, weight and other co-morbid conditions of the patient. Doxorubicin is the major drug of choice in case of breast cancer but the patients undergoing treatment with doxorubicin should be evaluated for cardiotoxicity as it is the major adverse effect for anthracyclin antibiotics. The patient should be monitored regularly and symptomatic treatment should also be given to treat and prevent further complications.

ABBREVIATIONS:

EF : Ejection Fraction

PET: Positron Emission Tomography

ECG: Electrocardiogram

BSA: Body Surface Area

BMI: Body Mass Index

LSCS: Lower Segment Cesarean Section

FNAC: Fine Need Aspiration Cytology

AC,P: Adriamycin, Cyclophosphamide, Paclitaxel

FAC: 5-Fluorouracil, Adriamycin, Cyclophosphamide

HB: Haemoglobin

CBP: Complete Blood Picture

Sr.Cr: Serum Creatinine

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