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Medical Oncology

"Effectiveness of Trastuzumab Therapy after a Massive Cardiac Arrest in One Adult Patient in Bangladesh"

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Abstract **Case Report**

Progressive improvement of patients with Trastuzumab therapy after massive cardiac arrest in an unusual case presentation of metastatic breast cancer with different receptor status in either breast.

Keywords: Trastuzumab, Arrest in One Adult Patient.

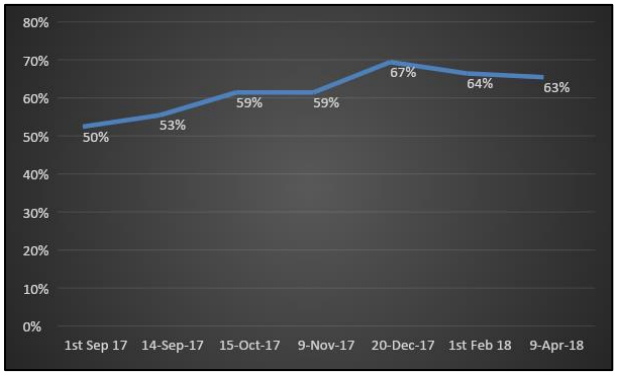
INTRODUCTION

Trastuzumab is a humanised monoclonal antibody developed to target the HER2 receptor which is overexpressed by some cancer cells, including 25 to 30% of breast cancers. Binding with high affinity to the extracellular domain of HER2, trastuzumab inhibits the proliferation of tumour cells that overexpress HER2. Breast cancer is the most frequently diagnosed cancer of women in Bangladesh & worldwide [1,2]. Over expression of the human epidermal growth factor ristaeceptor 2 (HER2) protein and amplification of the HER 2 gene is seen in 15%- 25% of breast cancers. This result is a rare aggressive nature of diseases. [3, 4]. Although recent analysis indicate that breast cancer molecular subtypes may be more relevant for prognosis than clinical HER 2 status. [5] Trastuzumab is a humanized monoclonal G (IgGI) antibody against the extracellular domain of the HER 2 Tyrosine Cinase Receptor, which is over expressed on breast cancer cells. The trials on Trastuzumab started a deduction of the recurrence rate of about 50% and reduction of mortality in 30% patients [3, 6] which led to almost worldwide implementation of Trastuzumab in daily practices [7-9]. As we know myocardial cells also express HER 2, which induces a cardioprotective effects on the heart in response to stress and explains why the inhibition of HER 2 by Transtuzuumab causes an increased susceptibility for cardio toxicity [10]. Studies showed that in advanced breast cancer cardiac events ever seen in 27% of patients when Trastuzumab concurrently administered with anthracycline and it is 3% when combined with Taxanes [11].

CASE REPORT

This report will present a rare case of progressive improvement of EF during Trastuzumab therapy in a Bangladeshi woman receiving Trastuzumab therapy in metastatic setting. The patient is 53 years non-diabetic, post-menopausal unremarkable family history, medical history with no personal habit of smoking or drinking alcohol, took OCP in reproductive age, presented with stage IV bilateral breast cancer with liver metastasis with luminal A molecular subtypes in left breast and HER 2 enriched molecular subtypes in right breast. After 4 cycles of TCH she went for MRI and she faced cardiac arrest and subsequent coma on board of MRI due to claustrophobia. After a 2 Month stay in ICU and CCU (when the patient was transferred to cabin a medical board was arranged and decision was made to discontinue any type of antibiotic therapy. Rather when the patient came to Chittagong started oral chemotherapy with Lapatinib+Capecitabine+Letrozole for 2 cycles. When she tolerated this schedule well needed Ing. Trastuzumab+Oral Capecitabine+Oral Letrozole up to 6 cycles. Then she received only Trastuzumab and Letrozole continued Transtuzumab up to 17 cycles. During this whole treatment period her EF (Ejection Fraction) on Echo improved. A chart is given to show the improvement. Before cardiac arrest EF was 64%. PET SCAN→ 13/02/2018 and seen No metabolically active disease. So Trustuzomab continued from 20 august 17 on discharge from ICU+CCU, 50%. Last PET SCAN done on 20/11/18 and seen no metabolically active disease.

Diagnosis report Date	F/U Echo with EF (%)
1st Sep 17	50%
14 Sep 17	53%
15 Oct 17	59%
9 Nov 17	59%
20 Dec 17	67%
1st Feb 18	64%
9 Apr 18	63%



DISCUSSION

The incidence of death due to cardio toxicity is comparably very low in studies done till now. Most cardiotoxicties has been proven to be temporary [12]. The European society for medical oncology guideline recommended using an algorithm for cardiac monitoring in patients who receive anthracycline and Trastuzumab in adjuvant setting, to be assumed at baseline 1, 3, 6, 9 months during treatment and then at 12 and 18 months after the initiation of treatment. Monitoring should be repeated drugs or following treatment as clinically indicated [13]. The European society of cardiology suggested that, cancer therapeutics related cardiac toxicity; LVEF should be confirmed by repeated cardiac imaging 2-3 weeks after the baseline diagnosis [14]. In my patient we can see there in a declination of EF from 64% to 50% after 4 cycles of Trastuzumab therapy and cardiac arrest on board of MRI. Then after 2 Months rest when again Trastuzumab started, Ejection Fraction was improving in each cardiac monitoring 3 weekly. Which oppose the actual observation till now in all previous studies [15, 16]. In seven studies, the cardiac review and evaluation committee independently reviewed and adjudicated cases of asymptomatic and symptomatic LVEF decline.

CONCLUSION

Intravenous trastuzumab is effective as a single-agent, and in combination with chemotherapy it significantly improves the median time to disease progression and survival time in patients with metastatic breast cancer overexpressing the HER2 receptor compared with chemotherapy alone. Cardiotoxicity is the main concern with therapy; particularly in patients with pre-existing cardiac dysfunction, the elderly and in combination with, or following, anthracyclines. Trastuzumab is indicated for use with paclitaxel as first-line therapy or as a single agent in second- or third-line treatment regimens for patients with metastatic breast cancer overexpressing HER2. Investigation is ongoing to ascertain the optimal combination regimen containing trastuzumab and antineoplastic agents. In addition, current research is focusing on the optimal timing, sequencing and duration of therapy as well as administration in the neoadjuvant and adjuvant setting. From this report we can expect more reviews regarding Trastuzumab related cardiotoxicity and more research on cardiac dysfunction due to Trastuzumab.

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