**COST EFFECTIVENESS OF SIMPSON’S BIPLANE METHOD & EARLY PREDICTORS OF LEFT VENTRICULAR DYSFUNCTION IN BREAST CANCER PATIENTS TREATED WITH TRASTUZUMAB**

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**Introduction**: Trastuzumab used as an adjunct to chemotherapy in receptor positive breast cancer patients, causes left ventricular systolic dysfunction (LVSD) in about 27% and needs regular monitoring during therapy.

**Purpose:** The aim of this 5-year study was to determine the cost effectiveness of Echocardiography using Simpson’s biplane method compared to Cardiac Ventriculography (MUGA scan) used in trials and assess early predictors for LVSD.

**Methods**: This is a retrospective cohort study from patient electronic records at Heart of England NHS trust (2010-2015). We analysed 134 patients undergoing Echocardiograms, following usual standard treatment (5- Fluorouracil, Epirubicin, Cyclophosphamide and Docataxel). All patients had screening and 3 monthly follow up echocardiograms (Ejection fraction calculated by Simpson’s Biplane method and regional wall motion abnormalities (RWMA). Patients with EF of <50% or a drop of 10 points in EF i.e., LVSD, were recommended cardiology referral and cessation of Trastuzumab.

**Results**: Out of 134 patients, 12 had RWMA (with normal LVSF). 115 patients had stable LVSF (Group 1) and 19 patients developed LVSD, necessitating discontinuation of Trastuzumab therapy (Group2). Patients in group 1 were 4 years older (61years group 1 v 57 years group 2). In Group 1, 4 of 115 patients had RWMA as compared to 8 of 19 in Group 2 (P=0.0001). In group 2 with RWMA, 5 had complete reversibility of left ventricular systolic function (LVSF) 1 had partial reversibility (<50%) and 2 had mild reversibility (< 10%). In Group 2, 11 patients with no RWMA, 9 had complete reversibility and 2 had mild reversibility. Deaths = 1 in group1, none in group 2. Mean period to LVSD= 139 days (group1), 192 days (group2). Patients referred to cardiologists had complete reversibility of LVSF. Average cost of Echocardiogram
=200 pounds per study; MUGA scan = 500 pounds. Overall savings were 40, 200 pounds per scan and > Half a Million for the whole study.

**Conclusion**:  Simpson’s biplane method for calculation of LVSF proved to be a cost effective tool in calculating ejection fraction. Patients with pre-existing RWMA developed LVSD earlier. Patients referred to cardiologists had better prognosis.