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Cardiac assessment and monitoring in patients with Acute Myeloid Leukaemia receiving Anthracycline therapy at Salford Royal Hospital NHS Foundation Trust.

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Introduction:

2016 ESC position paper has outlined practice guidelines in the assessment of patients at risk of developing cardiac toxicity undergoing chemotherapy. They recommended assessing patients clinically via history and examination, chemical biomarkers like NT-pro BNP, and Troponin, in addition to 12 leads ECG and echocardiography(1).

Methodology:

Between 1st Apr 18 to 31st March 2019, we identified 12 patients (8 males and 4 females, age 30-75, median 57) with acute myeloid leukaemia (AML) who had undergone Anthracycline therapy. We examined their electronic medical database in Salford Royal Hospital NHS foundation trust retrospectively. The target was to review our current practice in comparison to these recommendations. This included documentation about medical history and examination before chemotherapy, including any past history of heart failure, coronary artery disease (CAD), cardiomyopathy (including dilated cardiomyopathy, hypertrophic cardiomyopathy, restrictive cardiomyopathy), prior chemotherapy, family history of cardiovascular disease (CVD), hypertension diabetes, smoking, obesity, dyslipidaemia. We also evaluated if biomarkers such as NT-pro BNP and troponin were checked.

We reviewed the 12 lead ECGs if they were recorded prior and after chemotherapy; we evaluated for any ischemic changes or any evidence of left ventricular hypertrophy (LVH).Transthoracic echocardiogram reports were reviewed if present before chemotherapy and if left ventricular assessments were undertaken using Simpson's biplane ejection fraction(EF) as well as tissue Doppler assessments.

Figure 1 shows Pie chart for the number of patients who were assessed for different cardiovascular risk factors prior to chemotherapy

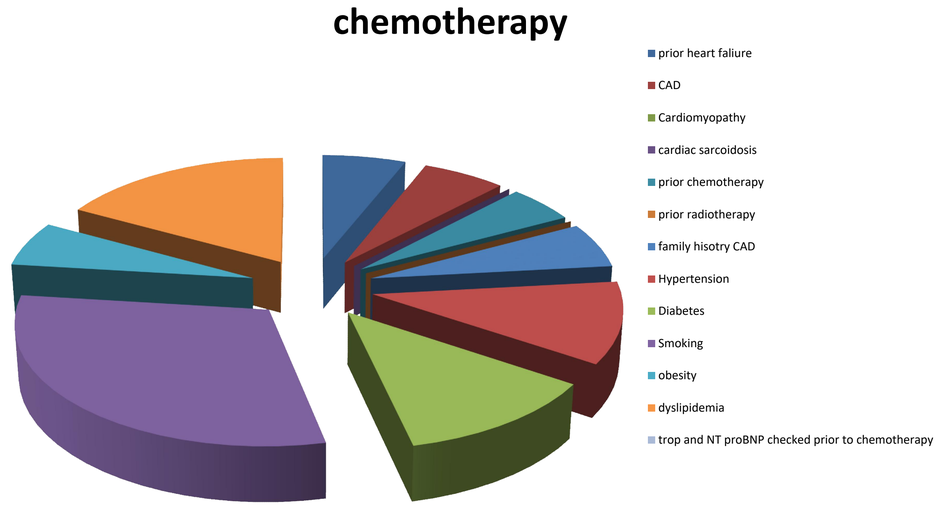


Figure 2 demonstrates the number of patients who had echocardiogram pre and post chemotherapy.

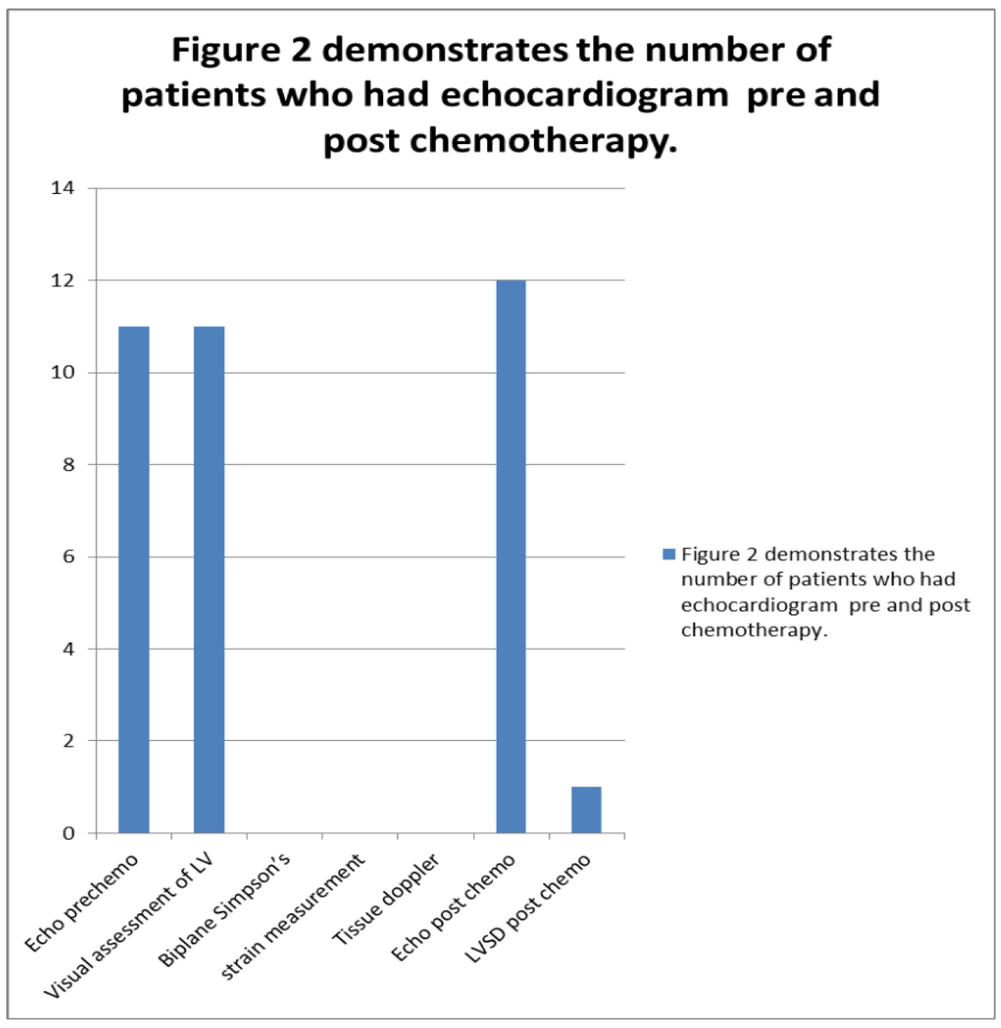
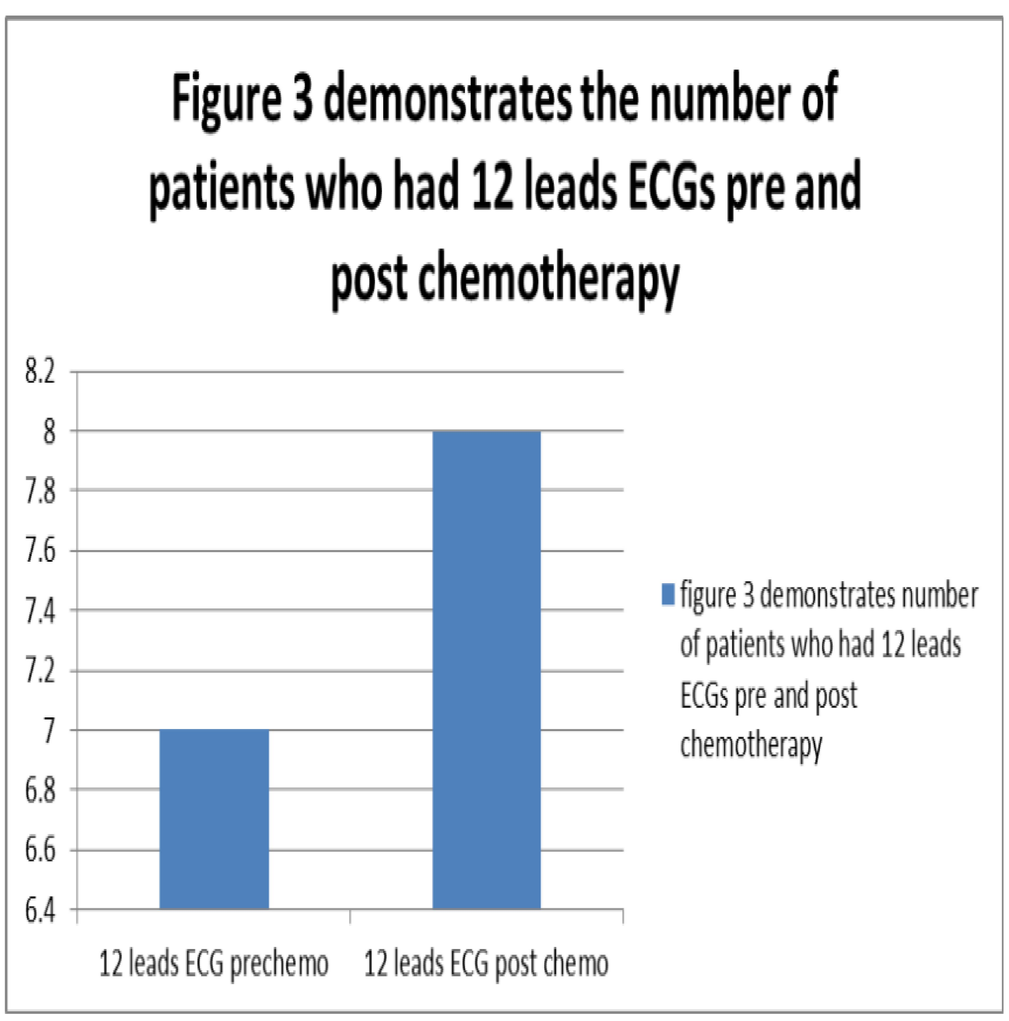


Figure 3 demonstrates the number of patients who had 12 leads ECGs pre and post chemotherapy



Results:

All the patients were assessed for cardiovascular risk factors pre-treatment: heart failure symptoms 1/10, CAD 1/10, cardiomyopathy 0/7, prior chemotherapy 1/12, family history of CVD 1/10, Hypertension 2/11, diabetes 2/10, smoking 5/10, obesity 1/10, and dyslipidaemia 2/7 were recorded. None had biochemical markers checked prior to chemotherapy, 1/12 post treatment.

11/12 had echocardiography pre-chemotherapy; all had normal biventricular systolic function on visual assessment, none had calculated biplane Simpson's EF, or strain measurement. None had tissue Doppler recorded. 12/12 had echocardiography post-treatment; 1/12 had LVSD post-chemotherapy.

12-leads ECG were recorded in 7/12 pre-treatment, 8/12 ECG post-treatment and 1/8 has ST-depression, 2/8 showed LVH voltage criteria. 2 patients died from progression of their AML. 1 patient had acute MI day 1 post chemotherapy resulting in LV impairment.

Conclusion:

Our practice compliance with 2016 ESC guidelines is modest at best. This data has identified a clear need to devise a local protocol for more structured approach of CVD risk stratification and assessment based on ESC position paper in the delivery of cardio-toxic treatment, early intervention and follow up in our patients with haematological malignancy.

References:

(1) Zamorano, J.L., Lancellotti, P., Munoz, D.R. et al (2016) '2016 ESC Position Paper on cancer treatments and cardiovascular toxicity developed under the auspices of the ESC Committee for Practice Guidelines: The Task Force for cancer treatments and cardiovascular toxicity of the European Society of Cardiology (ESC)' *European Heart Journal*, 37, 2768-2801.

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