Abstract: P367

Cardioprotective effect of angiotensin converting enzyme inhibitors and beta-blockers in the primary prevention of cardiotoxicity: systematic review and meta-analysis of randomised studies

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Background
Chemotherapy cardiotoxicity is a serious complication in breast and haematological malignancies. However, its primary prevention with angiotensin converting enzyme inhibitors (ACEI)/angiotensin II receptor antagonists (ARB) and/or beta-blockers (BB) medication has discrepant results. The aim of our study was to establish whether primary prevention using these treatments prevents cardiotoxicity and whether any of them is superior to the others.

Methods
A systematic review and meta-analysis was performed following a search of EMBASE, MEDLINE and PsycINFO from January 2005 to April 2019 of all randomised studies evaluating primary prevention of cardiotoxicity by chemotherapy with any of these treatments. Cardiotoxicity was defined as the drop of the left ventricular ejection fraction below 50% or greater than 10% and/or clinical heart failure during the first year of follow-up.

Results
Nine randomised studies with 913 participants in which chemotherapy was performed were included: 337 (37%) received BB, 152 (17%) received ACEI/ARB, 45 (5%) received BB+ACEI and 379 (41%) were controls. One hundred and eight cases (12%) developed cardiotoxicity (follow-up range: 1-12 months). Patients receiving cardioprotective treatment had a lower risk of developing cardiotoxicity than controls (RR=0.381, IC95%, 0.160-0.911, P=0.030, I²=63.2%; Fig.1). The subgroup analysis showed a non-significant tendency for both treatments to have a cardioprotective effect (BB: RR=0.477; IC95%, 0.178-1.275; P=0.140; I²=57.3% ) / ACEI/ARB: RR=0.283; IC95%, 0.027-2.982; P=0.293; I²=79.0%). There was no difference between both treatments in those studies comparing them (RR=0.743, CI95%, 0.325-1.698, P=0.481, I²=0.0%). The estimated number of patients to be treated to avoid one case of cardiotoxicity was 10 patients.

Conclusions
Primary prevention with BB and/or ACEI/ARB reduces cardiotoxicity by chemotherapy during the first year in breast and haematological malignancies. For every 10 patients treated, one case of cardiotoxicity could be
avoided.

Figure 1. Cases treated with BB and/or ACEI/ARB versus control group without treatment of the different randomised studies comparing the number of patients who developed cardiotoxicity during the first year.