Is cardiac wasting accompanied by skeletal muscle loss in breast cancer patients receiving anticancer treatment?

We have read with great interest the article by Klassen et al., which demonstrated that muscle strength was significantly decreased in breast cancer patients receiving anticancer treatment, compared with healthy subjects.\(^1\) In addition to impaired muscle strength, chemotherapy-induced cardiomyopathy has drawn much attention in this field.\(^1\) Intriguingly, some patients have shown dose-independent reversible cardiomyopathy, but others have displayed a dose-dependent irreversible one, which are typically caused by trastuzumab and anthracyclines, respectively.\(^2\) As yet, it remains unclear whether muscle strength is associated with cardiac function in patients with breast cancer and whether chemotherapy-induced muscle wasting is reversible and/or dose-dependent. In predicting and diagnosing of cardiac dysfunction, biomarkers such as B-type natriuretic peptide and cardiac troponin have shown promising results as well as echocardiography. Namely, elevated B-type natriuretic peptide and increased cardiac troponin were associated with subsequent left ventricular dysfunction and cardiovascular events, respectively,\(^3,4\) and abnormal strain imaging in echocardiography is currently the strongest predictor of cardiotoxicity.\(^5\) On the other hand, no biomarker has been developed for the prediction and diagnosis of muscle wasting, despite extensive research.\(^6-8\) Furthermore, conventional medical therapy for heart failure such as beta-blockers and angiotensin-converting-enzyme inhibitors (ACEi) had favourable effects on anthracycline-induced cardiomyopathy,\(^9,10\) while there might be no established treatment for muscle wasting, with the exception of exercise training.\(^11-13\) It is still under debate whether ACEi have protective effects on muscle wasting, although ACEi failed to prevent sarcopenia in older subjects.\(^14\) It seems important to focus on the similarities and differences between cardiac dysfunction and impaired muscle strength in patients with breast cancer.

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