

Left Ventricular Dyssynchrony and Chemotherapy-Induced Cardiotoxicity

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Abstract

To our knowledge, there is no comprehensive study on myocardial dyssynchrony indexes in adult patients receiving chemotherapy. We have noticed that mechanical dyssynchrony may precede LVEF decline and can predict early stages of cardiotoxicity in patient visiting our cardio-oncology department. We hypothesized that altered mechanical dyssynchrony may occur in asymptomatic patients following chemotherapy and these patients may benefit from optimal medical and cardiac resynchronization therapy.

Keywords: Dyssynchrony; LVEF

Nowadays cancer treatment approaches have improved significantly, switching malignancies to chronic disease. These novel approaches have raised the concern of adverse complications of cancer treatment in long term by increasing patients' survival. One of the main concerns are cardiovascular effects of some cancer treatment agents (especially anthracyclines and Herceptin). Systolic and diastolic function decline is the most common manifestation of chemotherapy induced cardiotoxicity [1,2]. The significance of earlier detection from the outlook of clinicians is more prominent, as most of cardiotoxic effects of chemotherapy agents are reversible with cessation of cancer treatment and initiation of heart failure standard medical treatment [3]. Several studies have suggested using imaging modalities for early identification of left ventricular dysfunction and future prediction of LVEF decline [2,3].

Global 2D strain have been studied and accepted as tool to identify early cardiac dysfunction, when conventional echocardiographic parameters are within normal limits [3]. LV Dyssynchrony indices are new concepts in patients on chemotherapy. These indices usually include septal systolic rebound stretch [SRSsept], interventricular mechanical dyssynchrony [IVMD], septal-to-lateral peak shortening delay [Strain-SL], and septal-to-posterior wall motion delay [SPWMD] and have been studied to predict response to cardiac resynchronization therapy [4].

Some studies have suggested that LV dyssynchrony can sensitively detect early cardiotoxicity in patients receiving chemotherapy and may demonstrate patients who may benefit from cardiac resynchronization therapy [1-3]. Cheung et al. studied asymptomatic children after anthracycline therapy and concluded that impaired LV myocardial deformation and mechanical dyssynchrony may exist following chemotherapy despite normal LV shortening fraction [5].

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Conclusion

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To our knowledge, there is no comprehensive study on myocardial dyssynchrony indexes in adult patients receiving chemotherapy. We have noticed that mechanical dyssynchrony may precede LVEF decline and can predict early stages of cardiotoxicity in patient visiting our cardio-oncology department.

In conclusion we hypothesized that altered mechanical dyssynchrony may occur in asymptomatic patients following chemotherapy and these patients may benefit from optimal medical treatment.

Ethical Statement

The manuscript does not contain clinical studies or patient data.

Conflict of Interest

The authors declare no conflict of interest.

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