REPLY: Novel Technologies Must Be Considered for Childhood Cancer Survivors at Risk for Cardiomyopathy

We appreciate the thoughtful response by Drs Mohan Singh Sindhi and Ahmad to our paper[1] on consensus recommendations for screening and management of childhood cancer survivors (CCS) at risk for cardiomyopathy. Our research aimed to summarize how clinicians are currently managing an adolescent and young adult patient population of CCS to whom adult cardiology guidelines are not directly applicable. We agree that artificial intelligence/machine learning algorithms for electrocardiogram interpretation, novel plasma biomarkers, and myocardial deformation imaging might all have a future role in screening and evaluating CCS for cardiomyopathy. Longitudinal research studies are necessary to establish the utility and feasibility of applying these technologies in the CCS population, which is often cared for in the general medical setting.

Novel plasma biomarkers hold promise as a time- and cost-effective screening strategy for asymptomatic left ventricular dysfunction, particularly if used to defer echocardiography for CCS with normal results. However, there are limited data on clinically meaningful biomarker thresholds, and current evidence does not support biomarker use as a standalone screening methodology for detecting cardiac dysfunction.[2] Prospective studies are needed to establish test metrics and determine whether a biomarker-guided strategy can alleviate or modify the need for echocardiograms in CCS.

Although myocardial deformation metrics such as global longitudinal strain are sensitive echocardiographic markers of cardiac dysfunction, recent evidence suggests that there may not be additive benefit to using such metrics to guide management. In the SUCCOUR (Strain Surveillance of Chemotherapy for Improving Cardiovascular Outcomes) trial, in an at-risk adult cancer survivor population randomized to global longitudinal strain-guided vs left ventricular ejection fraction-guided initiation of cardioprotective medications, there were no differences in left ventricular ejection fraction changes between the 2 arms at the 3-year follow-up.[3] Given this finding, along with the cost and lack of widespread availability, further evidence is needed to support the adoption of myocardial deformation imaging for the screening of CCS.

Overall, emerging technologies like those discussed by Drs Sindhi and Ahmad speak to the need to continue to review and update practice guidelines. Longitudinal cohort studies, such as the ongoing study by Skitch et al,[4] are needed to determine the predictive and prognostic value of abnormal biomarkers or abnormal imaging findings in CCS before their widespread adoption. We encourage this important research, which will inform future guidelines in the screening and management of this unique patient population.

***Rahela Aziz-Bose, MD**
Saro H. Armenian, DO, MPH
Anju Nohria, MD, MSC
Lisa B. Kenney, MD

*Dana-Farber Cancer Institute
450 Brookline Avenue, SW 311
Boston, Massachusetts 02215, USA
E-mail: rahela_aziz-bose@dfci.harvard.edu

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The authors attest they are in compliance with human studies committees and animal welfare regulations of the authors' institutions and Food and Drug Administration guidelines, including patient consent where appropriate. For more information, visit the Author Center.

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