

Cardio-Oncology, Then and Now: An Interview with Barry Trachtenberg

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Barry H. Trachtenberg, MD, is a cardiologist specializing in cardio-oncology, heart failure, and transplantation at Houston Methodist DeBakey Heart & Vascular Center in Houston, Texas, and guest editor of the December 2019 issue of the *Methodist DeBakey Cardiovascular Journal* focusing on cardio-oncology. In December, we sat down with Dr. Trachtenberg to discuss the evolving state of cardio-oncology.

How did you get started in cardio-oncology?

BT: When I was an adult cardiology fellow at the University of Miami rounding on the heart failure service, one of my patients was a young lady who had breast cancer five or six years prior. She survived breast cancer, but now was in the CCU on an intra-aortic balloon pump and was waiting for a heart transplant. It was really hard to see someone who fought something life-threatening and then had another equally bad disease because of the treatment needed to beat the first disease. It caught my interest, and when I mentioned that to my attending, he said, "Oh, well, you have to meet Steve Lipshultz." Steve Lipshultz was the head of the pediatric cardiology and a world-renowned expert in cardio-oncology, and I didn't even know he was there. So, my attending introduced me, and I got to spend time with Steve Lipshultz and get a crash course in cardio-oncology.



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In the review you wrote for this journal on [future directions in cardio-oncology](#), you say that 10 years ago, we wouldn't have even imagined that this would be a distinct specialty. Was there any formalized training when you started?

BT: No, although now it's becoming a little bit more common. There are a handful of programs in the United States and Europe that offer formalized cardio-oncology training. So far, these are not ACGME-accredited programs, but there is a push by some in the field towards that. However, the majority of people that are in cardio-oncology have just learned from their deep interest in it and from their experience.

What types of specialists are typically on a cardio-oncology team?

BT: You can be an oncologist, cardiologist, or hematologist and be considered a cardio-oncologist. For instance, some of the leaders in the field are oncologists that are just very interested in survivorship, and so they've become cardio-oncologists. You could also be a cardiologist of any stripe. I favor heart failure specialists because I think that's the most common ramification of cancer treatment apart from hypertension, so I think it's important to understand failure and treat it, but that's my personal bias. A lot of cardio-oncologists are imagers. There's a role for that because a lot of the diagnostic tools we use to catch the disease earlier are imaging related, like [echo and strain imaging](#), [MRI](#), etc. There are electrophysiologists that are cardio-oncologists because a lot of these medications have [arrhythmic effects](#), and there are also basic researchers and general cardiologists that are cardio-oncologists.

There's no one prototype for a cardio-oncologist. On my team at Houston Methodist, in addition to me and one of my heart failure colleagues, I have a nurse practitioner who's dedicated to cardio-oncology as well as a medical assistant, I think it's really important to have someone that's available to see patients regularly. I also have a research assistant who is mainly devoted to cardio-oncology, and I think that's an important aspect of a comprehensive cardio-oncology program. But of course that's just the way we have it here—not every program has to look this way.

What parts of the field you find most interesting day to day?

BT: The patient experience is still the best part of it. I love to help **prevent the onset of cardiomyopathy** because, even though I treat heart failure and advanced heart failure all the time, I'd love to have patients that don't need that expertise. Some patients very suddenly develop heart failure, and in those cases, we're able to intervene quickly and often reverse it.

It's also really interesting learning about new drugs and their cardiotoxicity. A lot of the new cancer therapies have higher rates of cardiotoxicity than we expected when they were first studied, so we're learning as we go. Some of the new immunotherapies can cause myocarditis, which is one of my particular clinical interests.

If you could decide what research was funded in cardio-oncology, what would you prioritize in the next five to ten years?

BT: One thing that I'm interested in is markers of disease that can help predict who might be more susceptible to cardiotoxicity, whether it's genetic or genomic markers. With all the emerging biomarkers, we're starting to see evidence that we might someday predict, to some degree, who can get cardiotoxicity or not. I think that's a very important area that I'd love to see more research in.

I'd also like to see more data on how to monitor patients on **immunotherapies and VEGF inhibitors** and tyrosine kinase inhibitors that can cause cardiotoxicity. Right now, we still don't know the best way to monitor them now. We often just see these patients after they develop symptoms and then start working them up. I'd like to see more research in the emerging role of PET, MRI, and other tests that can help detect cardiotoxicity earlier.

In terms of treating cancer, I'm curious to see if nanotechnology will give us new methods to deliver drugs more targeted towards the tumor with fewer effects on other organs.

Are the cardiotoxic effects of cancer therapies widely known among general cardiologists and oncologists?

BT: No, but I think we're beginning to see some improvement. Cardio-oncology has received a lot of positive attention through various modalities. There are two journals devoted to cardio-oncology. Now there are some fellowships. There's lots of interest in the field when I've gone to other hospitals. There is certainly much more knowledge out there, particularly in academic centers, but I think we have a long way ago. For example, I've met hematologists that have asked me if cardiotoxicity is real because they've never seen it.

Most importantly, I think patients are not often aware of the potential cardiac effects, and it's a difficult problem to layer onto cancer treatment. Imagine that you're a patient and you're going to get treated for cancer, which often is life-threatening, and your oncologist is already telling you about the horrible side effects of all these drugs. And, oh, by the way, they can also give you heart failure, so you might end up with another disease as bad as or worse than the cancer you have now.

It's a difficult conversation to have, but I think it is important that patients be aware of the potential side effects, not just from the chemotherapy, immunotherapy, but also from radiation therapy. **Radiation therapy to the chest**, especially the left side of the chest in the heart field, can cause all sorts of cardiac manifestations, often years later. Now there's increasing awareness of and more strategies to reduce the burden of radiation to the heart field. We have a long way to go, but we're getting there.

In an ideal world, when should the cardio-oncology specialist the cardio-oncology specialist get involved in a patient's care?

BT: It depends on where you are and what kind of program you have. I think patients that are getting any type of cardiotoxic treatment should have cardiac screening at baseline. At minimum, they should be evaluated with echocardiography, ideally with strain imaging, and they should have that periodically while they're getting chemotherapy. The evidence for screening is clearly there for anthracyclines, as well as HER2 antagonists. There are not guidelines for VEGF inhibitors, tyrosine kinase inhibitors, or immunotherapy yet, in part because we simply do not have enough evidence. There is much debate about who to screen and how to screen them because it is simply not cost-effective to screen all patients with serial imaging tests.

I think patients should see a cardio-oncologist if they are getting a specific dose of **anthracyclines or any high-risk chemotherapy**, or if they have risk factors related to anthracyclines. Risk factors

include being over age 60, having a history of hypertension or family history of heart failure and diabetes, or getting concomitant therapy with Herceptin or radiation. The American Society of Clinical Oncology and others have come out with monitoring guidelines. They don't specify how frequently you should monitor, but they all say that patients should be monitored if they're getting anthracyclines.

If a patient has any of these high-risk factors, they should be monitored in a formal program, if it's available at that institution. Otherwise, I think it's the responsibility of the oncologist to order screening, imaging, or to refer to a cardiologist that they have locally, but it's tough because lots of patients are getting cancer treatment and there's not a cardio-oncology program everywhere. To say that they all have to be treated by a cardio-oncologist is a little bit pie in the sky. Realistically, these patients should at least have periodic imaging.

Do you have any advice for physicians interested in specializing in cardio-oncology?

BT: It's a great field. It's very rewarding to be in a field where you could have a role in prevention and that help develop strategies for identifying early disease. I think it's also a field that has great job security. Cancer is not going away anytime soon, and even the newer treatments have cardiotoxic effects. There's so much to learn in this field, so it's a great field for those that are interested in research. It's also a great field for people who just want to take care of patients and help, not just an individual patients, but really help at a system level, help be involved in preventing the onset of heart failure. My advice is, if you're interested, to jump in.

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Conflict of Interest Disclosure:

Laura Gerik is Managing Editor of the *Methodist DeBakey Cardiovascular Journal*.