

The Compelling Need for a Cardiology and Oncology Partnership and the Birth of the International CardiOncology Society

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Abstract

Cardiac disease in patients with cancer is common and influences the longevity and quality of life both of patients in active treatment and of survivors of cancer. The disciplines of cardiology and oncology have increasingly recognized the benefits to patients of collaborating in the care of cancer patients with cardiac disease. This increased recognition arises from several factors: the aging population in which both cardiac and cancer diagnoses are common; the cellular and molecular therapeutic targets of newer medical treatments, and, in particular, the specific patient treatment choices and decisions that require careful, effective clinical interactions between these 2 disciplines. Responding to this need for an effective partnership between cardiology and oncology, the International CardiOncology Society was created and has set goals to develop and enhance our understanding and management of these clinical difficulties. (Prog Cardiovasc Dis 2010;53:88-93)

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Scene 1:

December 1991, Venice, Italy.

City General Hospital, Medical Ward.

A 49-year-old man with a history of gastric lymphoma diagnosed several years previously and now in complete remission presents to the emergency room with typical angina during strong physical activity. He was diagnosed with an acute inferior myocardial infarction confirmed by electrocardiogram and serum enzymes. He was admitted for observation to the floor. No telemetry or cardiac catheterization was performed since “he is a cancer patient”

Scene 2:

April 1994, Milan, Italy.

University Cardiologic Center, Intensive Coronary Care Unit.

A 45-year-old woman with metastatic breast cancer has a recent onset of dyspnea not responsive to standard treatments. Echocardiogram demonstrates massive pericardial effusion with tamponade. It is then decided there is no need for intensive care, only palliation, because “neoplastic pericardial effusion tamponade is a typical end-stage manifestation of a cancer patient and there is nothing to do”

Scene 3:

June 1995, Milan, Italy.

European Institute of Oncology.

At the end of the first year of activity in this comprehensive cancer center, the percentage of cancer patients admitted who had a cardiac consultation: 7%.

Scene 4:

December 2008, Milan, Italy.

European Institute of Oncology.

At the end of the 15th year of activity in one of the most important cancer centers in the world, the percentage of

Statement of Conflict of Interest: see page 92.

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Abbreviations and Acronyms**CV** = cardiovascular**ICOS** = International
CardiOncology Society**VEGF** = vascular endothelial
growth factor

cancer patients admitted who had a cardiac consultation: 77%.

Scene 5 and 6:

January 2009: The International CardiOncology Society is born.

September 2009: More than 100 international experts meet in Milan for the third international cardio-oncology congress.

Flash forward to 2025: All the cardiologists and oncologists of the world will have learned that for the optimal care of cancer patients, they enjoy working together.

It is this dream, hatched more than 15 years ago, that occurred to a group of cardiologists after noticing many discrepancies in the cardiac care of cancer patients.¹ Convincing cardiologists that patients with cancer are, in many cases, patients with a chronic comorbidity to be managed, more like diabetes, as opposed to a terminal disease, can be challenging. This change in focus arises from well-established data showing the survival rate of patients with cancer, as well as those with cardiovascular (CV) disease, has greatly increased over the past 3 decades. This increase in survival is explained by improvements in pharmacologic treatment, enhanced surgical approaches, more detailed and sophisticated procedures, and presumably the reduction and control of major risk factors for both cancer development and atherosclerosis. At the same time, as the population ages, the incidence and prevalence of cancer and CV disease rise simultaneously and frequently patients may present with both oncologic and cardiologic comorbidities.² In fact, cardiac disease and cancer together make up more than 70% of disease-related mortality in the developed world.³

In the future, an emphasis on “personalized” therapy will continue to make collaboration between cardiologists and oncologists important. For instance, the targets of therapy at the cellular and molecular level are sometimes identical in cancer therapeutics and in CV treatments. One example is vascular endothelial growth factor (VEGF). To control and limit tumor growth, oncologists have developed drugs, such as bevacizumab, which inhibit VEGF creating an antiangiogenic effect.⁴ Although the target of therapy is the tumor, it is clear that systemic effects are likely with any new drugs and many will have important CV effects.⁵ Already this has been observed^{6–9} and each new drug may have specific characteristics that result in unique toxicities. In cardiology, over the past decade, VEGF has been given in clinical trials through a number of techniques to promote angiogenesis in the myocardium and in other tissues affected by ischemia.¹⁰ Although VEGF has been identified in connection with angiogenesis in ischemic tissues, the therapeutic trials with VEGF failed to show meaningful improvement in coronary ischemia. A

second example is stem cells. Stem cell therapy, a vital component of treatment of certain hematologic-based malignancies, is being aggressively investigated in cardiac disease as a method of restoration of cardiac function after damage primarily from ischemic heart disease.¹¹ A partnership between the cardiologists and oncologists is essential to bring stem cell engraftment into this arena.

However, the most compelling reason for the effective integration between the disciplines of cardiology and oncology comes from everyday patient care and decision making. Trastuzumab, an extremely effective anticancer therapy for breast cancer targeting the Her2-neu receptor, had an initial signal of substantial cardiac-related toxicity.¹² Over the next decade, studies were carefully done with input from cardiology that helped refine the best target population for treatment with minimal toxicity¹³ and strategies were developed for dealing with individual patients to optimize their cancer treatment.¹⁴ Anthracyclines, a class of drugs known to cause substantial cardiac-related toxicity, are still widely used therapies.¹⁵ It had previously been generally believed that detection of toxicity was difficult and treatment of left ventricular dysfunction was not very successful.¹⁶ Over recent years, because of active research, primarily from cardiologists, paradigms have been developed to manage these problems, with a notable impact on patient outcomes.¹⁷ Newer anti-VEGF-based therapies have a common clinical characteristic in which hypertension is induced, sometimes to alarming levels.¹⁸ Partnership with cardiologists in the patient management has improved outcomes in these situations.

To provide optimal treatment in situations involving patients with problems in both arenas, a coordinated effort by experts in both disciplines is required. When a cardiac patient develops an oncologic problem, the treating cardiologist often loses interest and tends to assume a defeatist attitude that may exclude the patient from other intensive treatment and/or intervention possibilities. Conversely, when a patient with cancer develops a cardiac problem, the patient is too often excluded from first-line, more aggressive (and therefore, more effective) chemotherapeutic strategies with a major impact on the cancer outcome. The patient moves “beyond the jurisdiction” of both the cardiologist and the oncologist, without getting comprehensive care from either discipline. As a consequence, the management of such patients is limited, disjointed, and often inadequate and most importantly the patient feels left alone and unprotected. Thus, a new discipline, *CardiOncology*, was created to meet these needs. A primary goal of this working group is to investigate innovative strategies, to collaborate and provide evidence-based recommendations, and to develop interdisciplinary expertise that will allow optimal management of this new and growing category of patients.

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