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THE CURRENT STATE OF KNOWLEDGE ON THE MANAGEMENT OF ISCHEMIC HEART DISEASE IN PATIENTS WITH CANCER

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ABSTRACT

Cardiovascular disease and cancer are associated with high rates of morbidity and mortality worldwide. These pathological conditions often have common risk factors and may co-exist, with one evolving into another. Recent advancements in the management of patients with malignancy have improved their quality of life and survival. However, the risk of developing cardiovascular disease, in particular ischemic heart disease, remains high due to the cardiotoxic effects of chemotherapeutic agents and radiation therapy. Recent clinical trials have revealed new pharmacological and interventional strategies for the management of acute and chronic forms of ischemic heart disease in this patient population. In particular, shortened dual antithrombotic therapy following coronary angioplasty with third-generation drug-eluting stents may allow preventing bleeding complications and the earlier resumption of chemotherapy in patients presenting with acute coronary syndrome. In contrast, cancer therapy may be continued in patients with stable ischemic heart disease after administering anti-anginal medications for the treatment of myocardial ischemia induced by chemotherapy. Although surgical revascularization is associated with a high risk of mortality, it may be performed concomitantly with tumor resection to improve clinical outcomes. Prospective studies directed to the investigation of the safety and efficacy of these interventional approaches will allow determination of the optimal revascularization strategy. Implementation of individualized treatment will prevent the development of chronic heart failure and lead to reduction of cardiovascular mortality in patients with oncological diseases. This review addresses the common pathophysiological mechanisms, diagnostic methods, as well as novel preventive and therapeutic strategies in the management of ischemic heart disease in cancer survivors.

KEYWORDS: cancer, ischemic heart disease, chemotherapy, radiation therapy, cardio-oncology

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INTRODUCTION

Cardiovascular disease is considered one of the principal causes of death, with a mortality rate of 50% among cancer survivors [Mamas M et al., 2020; Li Q et al., 2025]. Ischemic heart disease (IHD) is a severe form of cardiovascular disease that may develop as a result of malignancy and its treatment, significantly deteriorating the clinical status and prognosis of cancer patients. In addition, elderly patients diagnosed with oncological diseases usually have a history of chronic cardiovascular disease [Ghosh A et al., 2017; Jiang C et al., 2025]. The development of IHD may be explained by the presence of cardiovascular risk factors, including smoking, obesity, diabetes mellitus, arterial hypertension, and dyslipidemia in cancer patients, which contribute to the progression of atherosclerosis [Wilcox N et al., 2024]. Moreover, chemotherapeutic agents and radiation therapy may cause vascular complications and myocardial injury [Yan T et al., 2024]. In particular, taxanes and vinca alkaloids may cause vasospasm, whereas alkylating agents may promote the development of coronary thrombosis [Lyon A et al., 2020; Barachini S et al., 2023]. Cancer patients who receive radiotherapy may develop worsening of endothelial dysfunction, myocardial fibrosis, and progression of atherosclerosis [Stefan M et al., 2023; Doolub G et al., 2024].

The management of IHD in cancer patients represents a challenging task for clinicians, which is usually decided based on age, type of malignancy and its treatment, as well as the presence of comorbidities and overall life expectancy [Mamas M et al., 2020]. The coexistence of IHD and cancer often complicates treatment because the therapy of one disease can adversely affect the prognosis of the other [Inohara T et al., 2019]. In particular, increased bleeding risk and thrombocytopenia, especially in patients with active cancer, may be serious obstacles to performing surgical interventions and percutaneous coronary angioplasty [Urban P et al., 2019; Waqar F et al., 2024]. Moreover, the presence of fibrosis and calcification of coronary lesions in cancer patients undergoing radiation therapy may complicate revascularization procedures [Borges N, Kapadia S, 2018]. Therefore, finding an optimal treatment of IHD that balances the hypercoagulable state and bleeding risks and,

at the same time, minimally affecting the course of antineoplastic therapy is required to achieve a favorable outcome in this population. In fact, pharmacological targeting of mutual pathological pathways leading to IHD and malignancy may be a key to the prevention and treatment of these diseases [Latifi Y et al., 2019].

This narrative review presents the common pathophysiological mechanisms and risk factors, the current diagnostic and therapeutic strategies for the management of acute and stable IHD in patients with cancer, as well as the impact of recent developments and perspectives in the area of cardio-oncology on the surveillance and management of cardiovascular complications in patients with oncological diseases.

Reverse cardio-oncology: the role of ischaemic heart disease in the development of cancer

The development of cancer has been shown to be related to the pre-existing arterial hypertension, stroke, atherosclerotic cardiovascular disease, myocardial infarction and heart failure [Aboumsallem J et al., 2020; Wilcox N et al. 2024]. Recently, the advances in the invasive and pharmacological treatment of IHD have significantly decreased the incidence of secondary coronary events in this patient cohort [Bottardi A et al., 2024]. However, this has resulted in an increase in the long-term incidence and mortality from non-cardiac diseases, including cancer [Wang Y et al., 2025]. In the previous study, the authors have shown that cancer incidence and mortality were more than two-fold higher in patients with atherosclerotic heart disease compared to those with non-atherosclerotic cardiovascular disease suggesting atherosclerosis as a risk factor for development of oncological diseases [Campolo J et al., 2023; Shu C et al., 2025]. The results of another study have shown increased cancer-related mortality in cardiac patients during the first year after myocardial infarction with the highest incidence of colorectal, lung, and urinary track tumors [Malmborg M et al., 2018]. Furthermore, patients with IHD who underwent percutaneous coronary intervention (PCI) had a high mortality rate due to the presence of non-cardiac diseases with the highest prevalence of neoplasms [Bharadwaj A et al., 2020].

The development of cancer has been shown to

be related to pre-existing arterial hypertension, stroke, atherosclerotic cardiovascular disease, myocardial infarction, and heart failure [Aboumsallem J et al., 2020; Wilcox N et al., 2024]. Recent advances in the invasive and pharmacological treatment of ischemic heart disease have significantly decreased the incidence of secondary coronary events in this patient cohort [Bottardi A et al., 2024]. However, this has resulted in an increase in the long-term incidence and mortality from non-cardiac diseases, including cancer [Wang Y et al., 2025]. In the previous study, the authors showed that cancer incidence and mortality were more than two-fold higher in patients with atherosclerotic heart disease compared to those with non-atherosclerotic cardiovascular disease, suggesting that atherosclerosis is a risk factor for the development of oncological diseases [Campolo, J et al., 2023; Shu C et al., 2025]. The results of another study have shown increased cancer-related mortality in cardiac patients during the first year after myocardial infarction, with the highest incidence of colorectal, lung, and urinary tract tumors [Malmberg M et al., 2018]. Furthermore, patients with ischemic heart disease who underwent percutaneous coronary intervention had a high mortality rate due to the presence of non-cardiac diseases, with the highest prevalence of neoplasms [Bharadwaj A et al., 2020].

The interrelation between cardiovascular disease and cancer may be explained by the presence of common risk factors and several pathological mechanisms. In particular, cardiovascular disease may lead to tissue hypoxia due to insufficient blood flow, hypoxemia, and endothelial alterations [Janaszak-Jasiecka A et al., 2021]. In patients with IHD, myocardial ischemia or infarction promotes the stabilization of hypoxia-inducible factor-1, which causes the transcription of vascular endothelial growth factor (VEGF), thereby contributing to the progression of atherosclerosis [Gao L et al., 2012; Florek K et al., 2024]. This factor also stimulates tumor growth by promoting angiogenesis [Ahmad A et al., 2022; Ngaha T et al., 2023; Shaw P et al., 2024].

Inflammation may contribute to the development of cardiovascular disease and cancer by inducing epithelial-to-mesenchymal transition, thereby triggering malignant transformation of cells [Libby

P, Kobold S, 2019]. In patients with acute myocardial infarction, necrotic cells may promote inflammatory responses by releasing danger signals [Hilgendorf I et al., 2024; Matter M et al., 2024]. Myocardial ischemia triggers the production of cytokines, including tumor necrosis factor alpha (TNF- α), which may activate nuclear factor-kB, a mediator of inflammation in cancer [Zhao H et al., 2021]. The efficacy of anti-inflammatory agents in the prevention of cardiovascular disease and cancer has been tested in previous trials. In particular, the CANTOS study has shown that administration of canakinumab, an interleukin-1 β (IL-1 β) neutralizing monoclonal antibody, was associated with a significant decrease in cardiovascular events and mortality due to malignancy [Ridker P et al., 2017]. Further multicenter clinical studies are warranted to develop novel pharmacological agents to target inflammatory activation, which may lead to a reduction in morbidity and mortality from cardiovascular disease and cancer.

Ischemic Heart Disease As an Evolving Complication of Radiochemotherapy

The development of IHD may occur due to adverse effects of anticancer therapies on the cardiovascular system. In addition, the inflammatory response induced by cancer and the presence of common risk factors, including obesity, smoking, and diabetes mellitus, may predispose cancer patients to cardiovascular complications, which particularly develop after administration of cardiotoxic chemotherapy [Meijers W, De Boer R, 2019; Yang Q et al., 2020]. The mechanisms of IHD development due to chemotherapy have not been sufficiently investigated. Short-term coronary events after this treatment have been previously linked to acute thrombosis and coronary vasospasm [Hassan S et al., 2018; Zafar A et al., 2021; Fabin N et al., 2022], whereas long-term events have been related to the anatomical complexity and severity of IHD due to endothelial injury induced by anticancer treatment [Janaszak-Jasiecka A et al., 2021].

The chemotherapeutic agents contribute to the development and progression of IHD by different mechanisms. In particular, taxanes and platinum derivatives have been shown to cause endothelial injury in experimental models, triggering epicardial coronary vasospasm and microvascu-

lar dysfunction [Hung C et al., 2015; Reuter S et al., 2025]. Tyrosine kinase inhibitors, such as nilotinib and ponatinib, as well as immunomodulators, such as lenalidomide and pomalidomide, can lead to progression of coronary and peripheral atherosclerosis in 1–10% of cases [Latifi Y et al., 2019; Xu K et al., 2023]. The use of highly toxic anthracycline drugs has also been associated with endothelial dysfunction and vascular side effects [Kattan L et al., 2025]. Furthermore, recent trials have shown that immune checkpoint inhibitors, possibly through T cell-mediated progression of atherosclerosis, are associated with a higher incidence of acute myocardial infarction and coronary revascularization compared to placebo [Drobni Z et al., 2020; Ellison J, Nohria A, 2023]. Moreover, agents inhibiting the VEGF-signaling pathway, such as sorafenib, can lead to arterial hypertension and thromboembolism due to decreased production of nitric oxide and prostacyclin, thereby contributing to the development of acute coronary syndrome in cancer patients [Arima Y et al., 2009; Dabravolski S et al., 2022; Ameri P et al., 2024].

The implementation of radiation therapy may also lead to the development of IHD and vascular complications [Cuomo J et al., 2018; Belzile-Dugas E, Eisenberg M, 2021]. This treatment usually affects all three layers of the coronary artery wall, leading to vascular damage [Kim L et al., 2020]. Furthermore, the endothelial injury induced by radiation may trigger activation of the inflammatory response, which contributes to the progression of coronary artery stenosis [Venkatesulu B et al., 2018; Baselet B et al., 2019]. In particular, this treatment has been associated with the development of ostial lesions of the left main stem or the proximal left anterior descending artery due to higher radiation exposure as a result of the anterior/central localization of these vessels within the mediastinum [Kirresh A et al., 2022]. Interestingly, the rate of ischemic events has been associated with the extent of cardiac exposure to radiation. Previous study has shown an association between mean cardiac dose and the risk of acute coronary events in women with breast cancer who developed acute coronary syndrome within a few years after radiotherapy [van den Bogaard V et al., 2017]. The authors of another study have shown a higher mortality risk and incidence of cardiac

events in patients with non-small cell lung cancer without a history of IHD who received cardiac radiation more than 10 Gy compared to patients with a pre-existing disease [Atkins K et al., 2019].

The cardiovascular complications induced by radiation therapy may be detected by a number of diagnostic tests. In addition to standard echocardiographic evaluation, coronary computed tomography angiography has gained interest for the assessment of coronary artery plaque burden and location years after radiation at the subclinical stage of the disease [Tagami T et al., 2021; Vatsa N et al., 2024].

The exercise tests, including stress perfusion cardiac magnetic resonance imaging and echocardiography, may be used for the detection of myocardial ischemia in patients with an intermediate risk of ischemic heart disease [Lancellotti P et al., 2013; Biersmith M et al., 2020]. The non-invasive tests may be successfully implemented instead of coronary angiography to avoid bleeding complications in this patient cohort [Biersmith M et al., 2020]. The development of cardiotoxicity due to radiation therapy may be prevented with angiotensin-converting enzyme inhibitors, β -blockers, and statins [Curigliano G et al., 2020]. In particular, the deep inspiratory breath-hold method, which leads to left cardiac displacement, thereby reducing radiation exposure, particularly in breast cancer patients, or prone positioning, may reduce myocardial injury [Rochet N et al., 2015; Shen J et al., 2025]. Furthermore, the use of three-dimensional conformal radiotherapy and volumetric modulated arc therapy has been shown to decrease the radiation dose to the heart [Boyle J et al., 2017; Kirresh A et al., 2022].

Treatment and Preventive Strategies for Ischemic Heart Disease in Patients with Malignancy

The symptoms of acute coronary syndrome may be atypical due to the treatment-related side effects in this population [Luca F et al., 2022]. In addition, these patients are predisposed to thromboembolic events caused by dysregulation of platelet activity, endothelial dysfunction, oxidative stress, and hypercoagulation [Doolub G, Mamas M, 2022; Hansda S et al., 2025]. The temporary interruption of cancer therapy may be advised if it is related to the development of acute coronary syndrome [Gevaert S et al., 2021; Luca F et al., 2022]. Fur-

thermore, anticancer therapy or cancer itself may cause bleeding complications or thrombocytopenia, thereby increasing potential risks related to coronary revascularization [Potts J et al., 2019; Haddad T et al., 2022; Yan T et al., 2024].

The current guidelines recommend treatment of cancer patients with ST-elevation myocardial infarction or high-risk non-ST elevation acute coronary syndrome with percutaneous coronary intervention by radial access, provided that their life expectancy is more than six months or if this condition is complicated by cardiogenic shock, malignant arrhythmias, or pulmonary edema [Lyon A et al., 2022]. Previous study has shown a more significant increase in survival after acute myocardial infarction in patients undergoing PCI within 3 days of admission compared to those receiving conservative therapy [Balanescu D et al., 2020]. However, in metastatic cancer patients with non-ST elevation myocardial infarction, no benefit in in-hospital mortality was observed after this treatment [Guddati A et al., 2016]. Recent trials have shown the efficacy of third-generation stents with a shortened dual antiplatelet therapy (DAPT) of less than six months' duration after percutaneous coronary intervention which may be implemented in patients with oncological diseases [Pushparaji B et al., 2023] (Table 1). In fact, previous study (LEADERS free) has shown the efficacy of the umirrolimus-coated BioFreedom stent followed by one-month dual antiplatelet therapy in decreasing the rate of cardiac death, myocardial infarction, or stent thrombosis [Urban P et al., 2015]. The results of another study (TWILIGHT) have revealed the advantage of ticagrelor after 3 months of dual antiplatelet therapy in reducing the risk of bleeding compared to ticagrelor and aspirin therapy [Mehran R et al., 2019]. Furthermore, drug-eluting balloons may be the treatment of choice in cancer patients with a high bleeding risk, allowing for the discontinua-

tion of dual antiplatelet therapy after one month of therapy [Jeger R et al., 2020; Yang Y et al., 2023; Yan T et al., 2024]. In fact, equal therapeutic effect with this intervention and stent therapy of *de novo* coronary lesions has been shown in non-ST elevation myocardial infarction [Scheller B et al., 2020]. Recent study revealed lower rates of mortality in cancer patients with ischemic heart disease who underwent preoperative percutaneous coronary intervention with a drug-eluting balloon compared to those with drug-eluting stent implantation [Gao et al., 2025].

The coronary artery bypass graft surgery may be performed in the presence of critical left main disease or multivessel disease in cancer patients with an expected survival exceeding 12 months [Valgimigli M et al., 2021; Luca F et al., 2022]. In fact, improved short-term outcomes in cancer patients who underwent simultaneous cardiac and tumor surgeries have been reported [Zhang M et al., 2022]. However, surgical revascularization of these patients still imposes a high mortality risk due to abnormal coagulation and may promote disease progression in this vulnerable population [Mamas M et al., 2020].

The effect of modified antithrombotic therapy after percutaneous coronary intervention has been described in this cohort. In particular, previous study (STOPDAPT-2) demonstrated that one-month dual antiplatelet therapy followed by clopidogrel treatment decreased bleeding risk and cardiovascular events [Watanabe H et al., 2019] (Table 1). Moreover, a more significant reduction in bleeding events has been revealed after 1-month compared to 3-month dual antiplatelet therapy [Valgimigli M et al., 2021]. The authors of another study have demonstrated that cancer therapy may be continued after cessation of aspirin and the P2Y12 inhibitor within 6 months after percutaneous coronary intervention [Balanescu D et al., 2021]. However, in case

Editor's Note:

LEADERS = Limus-Eluted from A Durable polymer-free stent

"The LEADERS FREE trial is a study focused on the use of stents releasing limus (an antiproliferative substance) without the use of a durable polymer in patients at high risk of bleeding."

TWILIGHT = Ticagrelor With Aspirin or Alone In High-Risk Patients After Coronary Intervention

TWILIGHT is a randomized, double-blind, placebo-controlled trial with a run-in period, evaluating the safety and efficacy of early aspirin discontinuation after percutaneous coronary intervention (PCI).

STOPDAPT-2 Short and Optimal Duration of Dual Antiplatelet Therapy-2

The STOPDAPT-2 Trial is a study investigating whether dual antiplatelet therapy (DAPT) can be discontinued after just 1 month, switching to clopidogrel monotherapy instead of the standard 6–12 months of DAPT.

of thrombocytopenia present in 10–25% of patients, this treatment may be continued with a platelet count ranging from 30,000/ μ L to 50,000/ μ L [Iliescu C et al., 2016; Radmilovic J et al., 2020; Doolub G, Mamas M, 2022]. Thus, shortened dual antiplatelet therapy followed by a single antiplatelet agent after percutaneous coronary intervention may be an optimal therapy option in patients with malignancy [Byrne R et al., 2023; Pushparaji B et al., 2023].

The pharmacotherapy with angiotensin-converting enzyme inhibitors, β -blockers, statins, smoking cessation, and physical activity, may be considered for treatment and secondary prevention of acute coronary syndrome to reduce mortality in this population [Yusuf S et al., 2012; Yan T et al., 2024]. Cancer patients with stable angina receive anti-anginal drugs which may improve tumor prognosis. These agents, together with aspirin and angiotensin antagonists, have been shown to exert cardioprotective effects in this cohort [Han X et al., 2019]. The goal of this therapy in asymptomatic cancer patients with chronic ischemic heart disease is to prevent disease progression and the development of acute coronary syndrome [Das D et al., 2019]. The type of chemotherapy also needs to be considered. In particular, 5-fluorouracil and capecitabine may induce coronary vasospasm, and treatment with vasodilators, including nitrates,

may decrease myocardial ischemia, thereby allowing the continuation of antineoplastic therapy [Teperikidis E et al., 2022]. Platinum-based drugs may induce ischemia after the first cycles in IHD, whereas immune checkpoint inhibitors promote progression of atherosclerosis leading to stable angina [Kondapalli L et al., 2020]. If symptoms of angina persist, coronary revascularization should be considered in this population [Han X et al., 2019].

This interventional method may not have an advantage over conservative treatment in stable angina and should be decided on an individual basis [Pushparaji B et al., 2023]. In particular, it may be considered in patients with a favorable prognosis before and during cancer treatment [Watanabe H et al., 2019]. The assessment of coronary stenosis in cancer patients with stable IHD by fractional flow reserve has recently been shown to improve outcomes [Kim J et al., 2022]. The implementation of PCI and coronary artery bypass surgery may be complicated after radiotherapy due to coronary artery calcification and injury of the internal mammary arteries [Cuomo J et al., 2018; Iliescu C et al., 2018]. The latter may be performed simultaneously with tumor surgery to decrease post-operative complications [Li Z et al., 2019]. The duration of dual antiplatelet therapy after coronary revascu-

TABLE 1.

An overview of clinical trials showing the efficacy of revascularization techniques and modified antiplatelet therapy in patients with ischemic heart disease and/or cancer

Clinical Trial(s)	Patients	Diagnosis	Duration of DAPT	Types of Intervention	Study Endpoints	Sources
LEADERS free	2466	ACS Stable IHD	1 month	BioFreedom DES vs. BMS	Reduction in cardiac death, MI and stent thrombosis	[Urban P et al., 2015]
TWILIGHT	9006	ACS	3 months Ticagrelor	DES	Decreased risk of bleeding	[Mehran R et al., 2019]
STOPDAPT-2	3045	ACS Stable IHD	1month Clopidogrel	Xience DES	Low risk of death, cardiac events and bleeding	[Watanabe H et al., 2019]
RSCO	164 [§]	Acute MI and cancer	9 months	DEB vs. DES	Reduced rate of bleeding and MACE	[Yang Y et al., 2023]
RCS	127 [§]	Stable angina, ACS and cancer	3 vs. 7.5 months	DEB vs. DES Tumor surgery	Decreased all-cause mortality	[Gao R et al., 2025]

NOTES: ACS - acute coronary syndrome; BMS - bare metal stent; CCS - chronic coronary syndrome; DAPT - dual antiplatelet therapy - DEB - drug-eluting balloon; DES - drug-eluting stent; IHD - ischemic heart disease; MACE - major adverse cardiovascular event; MI - myocardial infarction; NSTEMI - non-ST-elevation myocardial infarction; RCS - retrospective cohort study; RSCO - retrospective observational study; (§) - cancer patients.

larization should be decided based on thrombotic and bleeding risks, as well as disease stage and treatment [Rochet N et al., 2015; Urban P et al., 2019; Knuuti J et al., 2020]. In cancer patients with chronic IHD without prior myocardial infarction or angioplasty, antiplatelet therapy may be limited to aspirin or clopidogrel [Knuuti J et al., 2020]. However, the concomitant use of certain chemotherapeutic agents and cardiovascular medications, including verapamil, should be avoided due to adverse drug interactions [Latifi Y et al., 2019].

Management of Ischemic Heart Disease after Cancer Radiotherapy

Presently, there is a lack of guidelines for the management of cardiovascular disease in these patients. Therefore, the implementation of PCI may be used for the treatment of coronary stenosis and valvular heart disease [Yang Q et al., 2020]. The culprit lesions which develop after radiation therapy can be resistant to treatment due to fibrosis and calcification [Borges N, Kapadia S, 2018]. Moreover, angioplasty with coronary artery bypass graft imposes a mortality risk due to increased bleeding complications and the presence of radiation-induced pericardial disease, porcelain aorta and mediastinal fibrosis [Cuomo J et al., 2018; Das D et al., 2019]. The intervention with PCI may be indicated in patients with acute coronary syndrome, multivessel and left main disease with SYNTAX (Synergy Between Percutaneous Coronary Intervention with Taxus and Cardiac Surgery) scores less than 22 and 32, respectively [Das D et al., 2019; Desai M et al., 2019]. The P2Y12 inhibitor may be discontinued after 6 months to decrease the bleeding risk [Levine G et al., 2016]. The statin therapy may also be effective in reducing overall cardiovascular risk after radiation therapy [Boulet J et al., 2019; Kim L et al., 2020].

The results of clinical studies evaluating the efficacy of interventional treatment of IHD in this cohort are inconclusive. A higher risk of all-cause and cardiovascular mortality after PCI in cancer patients has been revealed following radiotherapy compared to those with IHD [Thakker R et al., 2022]. In contrast, another study has shown no difference in mortality after this procedure between these patients and the control group [Fender E et al., 2017]. However, recent evidence has shown that coronary

artery bypass graft surgery in cancer patients with IHD induced by thoracic radiation is associated with improved survival [Dunn et al., 2020].

CONCLUSION

The advancements in cancer treatment have contributed to improved survival in patients with oncological diseases. Unfortunately, this benefit is achieved at the cost of life-threatening side-effects of cancer, cardiotoxic chemotherapy and radiation treatment which often lead to decreased quality of life and increased mortality. The incidence of cardiovascular disease, including IHD, has increased over the past years in this cohort. In particular, chemotherapeutic agents may induce myocardial ischemia by causing endothelial dysfunction, thrombosis and vasospasm of coronary arteries, whereas thoracic radiation has been associated with an increased incidence of mediastinal fibrosis and valvular heart diseases, complicating the interventional treatment. On the other hand, the presence of atherosclerotic injury and chronic inflammatory activation in cancer-naïve patients with pre-existing IHD may contribute to the development of cancer.

The correction of common risk factors and measures to decrease cardiotoxicity of antineoplastic therapy may prevent the progression of IHD. In particular, angiotensin-converting enzyme inhibitors and β -blockers may prevent the deterioration of myocardial dysfunction and development of chronic heart failure at the subclinical stage of cardiotoxicity. In addition, reducing the dose of radiation exposure and chemotherapeutic agents, or changing to less cardiotoxic drugs, may be a solution to decrease cardiac injury, especially in patients with pre-existing cardiovascular disease.

The implementation of PCI may be recommended in cancer patients who develop acute coronary syndrome which may often require the temporary interruption of anticancer therapy. The third-generation coronary stents allow a shortened duration of antiplatelet therapy to prevent bleeding complications. Cancer patients with an adequate response to chemotherapy, stable clinical condition and favorable disease prognosis may benefit from coronary artery bypass grafting, which may be performed simultaneously with tumor surgery. However, the potential effects and safety of these

interventional methods of treatment on the long-term outcome of cancer patients need to be investigated in large observational trials which will assist in developing clinical practice guidelines for the management of IHD in this special population.

The realization of educational and professional programs may increase awareness about the potential side-effects of chemotherapy and radiation treatment among oncologists and cancer survivors in Armenia. Furthermore, the development of the cardio-oncology service in specialized medical centers will contribute to improved outcomes in this patient population. Unfortunately, oncologists primarily focus on the treatment of the disease, often underestimating the potential risks associated with the cardiotoxicity of cancer therapy. The surveillance of cardiovascular health in these patients will

allow the early detection of subclinical myocardial dysfunction and development of heart failure.

The outcome of cancer survivors may be improved by the continuous monitoring of cardiac function by advanced echocardiographic parameters and cardiac biomarkers throughout chemotherapy, allowing the timely administration of cardioprotective treatment in the presence of early signs of cardiotoxic cardiomyopathy. The management of cardiovascular complications represents a challenging task requiring a multidisciplinary collaboration between cardiologists and oncologists. Further clinical studies are warranted to develop new surveillance methods and therapeutic strategies to improve the quality of life and survival of cancer patients with cardiac diseases.

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