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Cancer patients' knowledge about their therapy and cardiac risk associated with it

Short title: Cardiooncology patients' knowledge of cardiac complications of therapy

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INTRODUCTION

Due to progress in medicine, we are now often able to cure cancer patients or manage cancer as a chronic illness. In 2019, the number of cancer survivors reached 16.9 million people, and it is estimated to reach 22 million by 2030 [1].

Advances in cancer treatment have contributed to the growing number of people who have been cured of cancer but may have potential cardiac complications from cancer therapy. The awareness of such complications is therefore becoming important, as it is cardiac complications that primarily affect the prognosis after cancer. Estimates show that cardiac disease is the second cause of death in oncology patients [2]. The European Cardiooncology Guidelines emphasize that after the completion of cardiotoxic oncologic treatment, reassessment of cardiovascular risk is recommended to determine the course of long-term control. The risk of the complications above depends on the type of chemotherapy. However, in the case of radiation therapy directed at the chest, there is no safe dose for the heart, and the number of complications increases with time [3].

The aim of the study was to find out patients' knowledge and opinions on the cardiac risks associated with cancer therapy and the need for cardiac surveillance during and after treatment.

MATERIAL AND METHODS

Based on the literature review and recommendations, a self-developed questionnaire was prepared with 40 questions (37 single choice and 3 multiple choice) and with 8 additional socio-demographic questions. The tool was consulted with 4 experts in cardiology, public health, patient education and health care. The resulting instrument aimed to gather information on respondents' knowledge about their treatment, awareness of the cardiac risk of cancer treatment, and positive and negative health behaviors. Two hundred forty-three patients of the outpatient cardiooncology clinic located in Poznań filled in the anonymous survey between October 2023 and April 2024. The Bioethics Committee of the Poznan University of Medical Sciences, in its statement KB — 919/22, confirmed that the study did not constitute a scientific experiment.

Categorical data were analysed with the χ^2 test, Fisher–Freeman–Halton test and/or as the difference between two proportions. Comparison of two groups was performed using the Mann–Whitney U-test. All results were considered significant at $P < 0.05$. Statistical analyses were performed with Statistica 13.0 (StatSoft Inc.) or StatXact 11.0 (Cytel Inc.).

RESULTS

Characteristics of the surveyed group

A total of 243 patients with active cancer agreed to participate in the study. Of these, 24.3% were men and 75.7% were women. The predominant cancers among the respondents were breast cancer 135 (55.6%) and lymphoma 41 (16.9%). There were also 16 patients with uterine cancer (6.6%), 7 with lung cancer (2.9%), 13 with leukemia (5.3%), 7 with kidney cancer (2.9%), and 23 with ovarian cancer (9.4%).

Among the respondents, as many as 171 people (70.4%) were afraid of possible cardiac complications after oncological treatment. The following survey questions aimed to determine the actual state of patients' knowledge of cardiac complications of oncological therapy. When asked about the need for periodic follow-up cardiology examinations, 76 people (31.3%) said they were necessary for up to one year after the end of chemotherapy, 24 people (9.9%) said for up to five years, 6 people (2.5%) said for 10 years, and 75 people (30.9%) said for the rest of their lives. More than 20% did not know whether they should have cardiac monitoring after completing chemotherapy treatment. The patients were also asked if cardiac monitoring was

necessary 10 years after radiotherapy; as many as 74.1% did not know the answer. Only 20.7% of the respondents answered that cardiac monitoring after chest radiotherapy was necessary for the rest of their lives, and 48.1% of the patients believed such checks were unnecessary.

The same group of respondents was asked about cardiac monitoring during cancer treatment; 68.3% of the patients remembered being consulted by a cardiologist, 81.5% remembered having an electrocardiogram, and 53.5% responded that they had an echocardiogram. Next, the respondents were asked if their doctor had informed them about possible cardiac complications of chemotherapy, and 55.1% said no, while another 20.6% did not remember. A similar question about chest radiotherapy was answered as follows: 57.2% were not informed by the doctor about possible cardiac complications, and 30.5% did not remember.

Notably, female patients' answers to most of the questions in Table 1 significantly differ from male patients.

When asked if they were concerned about possible cardiac complications of cancer treatment (question 1), more women than men answered “Yes”. In questions 5 and 6 regarding cardiac monitoring during cancer treatment, fewer men (P <0.001) than women answered “Yes”, while more answered “I do not remember”. As many as 13.04% of female (F) respondents and 32.20% of male (M) respondents answered “I do not remember” in question 5 and 4.89% (F) and 18.64% (M) in question 6, respectively.

DISCUSSION

Depending on the risk of cardiovascular toxicity, long-term cardiac monitoring should include cardiac follow-up, patient education, and mitigation of cardiovascular risk factors. Our survey shows the state of patients' knowledge during and after oncology treatment. It also shows the extent to which patients feel educated by their physicians about the need to perform cardiovascular checks [4].

In our survey, as many as 70.4% of the patients are concerned about cardiac complications after cancer treatment. On the other hand, only 66.3% of the respondents believe cardiac checks after chemotherapy are necessary. The data is even more alarming for chest radiation therapy: just 32.1% of the patients thought that it is harmful to the heart. What is more, only 20.2% of the patients believed that these complications can occur even 10 years after radiation therapy. While not every patient is actively interested in their treatment, it is surprising that in this group of respondents, 46.9% considered their health knowledge to be very good or good.

The presented results may cause considerable concern about the lack of follow-up for many cardiooncology patients after cancer treatment. This concern is even more significant if we consider the recommendations for cardiac follow-up in this group of patients. Adult asymptomatic cancer survivors in the very high-risk and early high-risk groups should have a transthoracic cardiac echocardiography at 1, 3, and 5 years after the completion of cardiotoxic cancer treatment and every 5 years after that [5]. Patients after thoracic radiotherapy should also have non-invasive screening for coronary artery disease and carotid artery disease [6]. Even in patients at moderate risk of complications, cardiovascular evaluation after oncology treatment should be considered every 5 years, including clinical examination, electrocardiography, echocardiography and natriuretic peptide determination.

General population surveys show that more men, compared to women, perceived their health as excellent and very good. In addition, it is well known that women are more aware of health warnings related to various health risks and use health services more often than men. For example, it is normative for men in many cultures to avoid health care [7]. Risky health behaviors are an expression of masculinity for men, but for women, gender norms can limit women's power and restrict their ability to take control of their health. In this area, our findings suggest that female patients are more aware of–cardiac risks and also feel the need of cardiological surveillance than male cancer patients.

The available research demonstrates the critical role of oncology healthcare professionals in promoting healthy lifestyle changes in cancer survivors and informing researchers and healthcare professionals about the methods and strategies they can use to do that effectively [8].

Cancer and cardiovascular disease are significant causes of morbidity and mortality in developed countries. Our study shows that there is a need to educate cancer patients about the impact of cancer therapy on cardiovascular health. Also, special attention should be paid to men as their health literacy might be lower than that of women. Unfortunately, patients are often not informed by practitioners at all or are not informed in an efficient way. It might result from insufficient time for conversations with patients or a lack of training to inform and communicate effectively.

Article information

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REFERENCES

1. Glasgow TE, McGuire KP, Fuemmeler BF. Eat, sleep, play: health behaviors and their association with psychological health among cancer survivors in a nationally representative sample. BMC Cancer. 2022; 22(1): 648, doi: 10.1186/s12885-022-09718-7, indexed in Pubmed: 35698055.
2. Lyon AR, López-Fernández T, Couch LS, et al. 2022 ESC Guidelines on cardio-oncology developed in collaboration with the European Hematology Association (EHA), the European Society for Therapeutic Radiology and Oncology (ESTRO) and the International Cardio-Oncology Society (IC-OS). Eur Heart J. 2022; 43(41): 4229–4361, doi: 10.1093/eurheartj/ehac244, indexed in Pubmed: 36017568.
3. Leszek P, Klotzka A, Bartuś S, et al. A practical approach to the 2022 ESC cardio-oncology guidelines: Comments by a team of experts - cardiologists and oncologists. Kardiol Pol. 2023; 81(10): 1047–1063, doi: 10.33963/v.kp.96840, indexed in Pubmed: 37660389.
4. Michel G, Mulder RL, van der Pal HJH, et al. Evidence-based recommendations for the organization of long-term follow-up care for childhood and adolescent cancer survivors: a report from the PanCareSurFup Guidelines Working Group. J Cancer Surviv. 2019; 13(5): 759–772, doi: 10.1007/s11764-019-00795-5, indexed in Pubmed: 31396878.
5. Klotzka A, Iwańczyk S, Ropacka-Lesiak M, et al. Anthracycline-induced microcirculation disorders: AIM PILOT Study. Kardiol Pol. 2023; 81(7–8): 766–768, doi: 10.33963/KP.a2023.0108, indexed in Pubmed: 37190918.
6. Płońska-Gościniak E, Piotrowski G, Wojakowski W, et al. Management of valvular heart disease in patients with cancer: Multidisciplinary team, cancer-therapy related cardiotoxicity, diagnosis, transcatheter intervention, and cardiac surgery. Expert opinion of the Association on Valvular Heart Disease, Association of Cardiovascular Interventions, and Working Group on Cardiac Surgery of the Polish Cardiac Society. Kardiol Pol. 2023; 81(1): 82–101, doi: 10.33963/KP.a2023.0023, indexed in Pubmed: 36641646.

7. Pinto BM, Trunzo JJ. Health behaviors during and after a cancer diagnosis. Cancer. 2005; 104(11 Suppl): 2614–2623, doi: 10.1002/cncr.21248, indexed in Pubmed: 16247806.
8. Karasiewicz M, Chawłowska E, Lipiak A, et al. How to improve cancer prevention knowledge? A way to identify gaps and tackle the limited availability of health education services in primary health care using the european code against cancer. Front Public Health. 2022; 10: 878703, doi: 10.3389/fpubh.2022.878703, indexed in Pubmed: 35586014.

Table 1. Patients' opinions (n = 243) and knowledge about cardiac risk and cardiological treatment during cancer therapy and sex differences

Results from 243 patients (184 women, 59 men)	Yes	No	*P*-value of female–male comparisons*
1. Are you concerned about possible cardiac complications of cancer treatment?	**171 (70.4%)** ♀ 137 (74.46%), ♂ 34 (57.63%)	**72 (29.6%)** ♀ 47 (25.54%), ♂ 25 (42.37%)	0.014
	Yes	No	I don't remember	*P*-value of female–male comparisons[a]
2. Did your doctor inform you about possible cardiac complications caused by cancer drugs?	**59 (24.3%)** ♀ 55 (29.89%), ♂ 4 (6.78%)	**134 (55.1%)** ♀ 94 (51.09%), ♂ 40 (67.80%)	**50 (20.6%)** ♀ 35 (19.02%), ♂ 15 (25.42%)	0.001

3. Did your doctor inform you about possible cardiac complications caused by radiation therapy to the chest?	**30 (12.3%)** ♀ 29 (15.76%), ♂ 1 (1.70%)	**139 (57.2%)** ♀ 104 (56.52%), ♂ 35 (59.32%)	**74 (30.5%)** ♀ 51 (27.72%), ♂ 23 (38.98%)	0.010
4. Did a cardiologist examine you during cancer treatment?	**166 (68.3%)** ♀ 121 (65.76%), ♂ 45(76.27%)	**61 (25.1%)** ♀ 52 (28.26%), ♂ 9 (15.25%)	**16 (6.6%)** ♀ 11 (5.98%), ♂ 5 (8.48%)	0.115
5. Did you have an echocardiogram, known as a cardiac echo, during your cancer treatment?	**130 (53.5%)** ♀ 103 (55.98%), ♂ 27 (45.76%)	**70 (28.8%)** ♀ 57 (30.98%), 13 (22.03%)	**43 (17.7%)** ♀ 24 (13.04%), ♂ 19 (32.20%)	0.003
6. Did you have an electrocardiogram test during your cancer treatment?	**198 (81.5%)** ♀ 155 (84.24%), ♂ 43 (72.88%)	**25 (10.3%)** ♀ 20 (10.87%), ♂ 5 (8.47%)	**20 (8.2%)** ♀ 9 (4.89%), ♂ 11 (18.64%)	0.007
	Yes	No	I don’t know	*P*-value of female–male comparisons*
7. In your opinion, can chemotherapy “damage” the heart?	**182 (74.9%)** ♀ 146 (79.35%), ♂ 36 (61.02%)	**18 (7.4%)** ♀ 13 (7.07%), ♂ 5 (8.47%)	**43 (17.7%)** ♀ 25 (13.59%), ♂ 18 (30.51%)	0.011
8. In your opinion, should the heart be	**196 (80.7%)**	**8 (3.3%)** ♀ 4 (2.17%),	**39 (16%)** ♀ 20 (10.87%),	<0.001

monitored during chemotherapy?	♀ 160 (86.96%), ♂ 36 (61.02%)	♂ 4 (6.78%)		♂ 19 (32.20%)		
9. In your opinion, should one go to a cardiologist for follow-up after cancer treatment?	**161 (66.3%)** ♀ 128 (69.57%), ♂ 33 (55.93%)	**11 (4.5%)** ♀ 9 (4.89%), ♂ 2 (3.39%)		**71 (29.2%)** ♀ 47 (25.54%), ♂ 24 (40.68%)		0.092
10. In your opinion, should the heart be monitored after radiation therapy to the chest?	**80 (32.9%)** ♀ 76 (41.30%), ♂ 4 (6.78%)	**79 (32.5%)** ♀ 50 (27.17%), ♂ 29 (49.15%)		**84 (34.6%)** ♀ 58 (31.52%), ♂ 26 (44.07%)		<0.001
11. In your opinion, can radiation therapy to the chest “damage” the heart?	**78 (32.1%)** ♀ 70 (38.04%), ♂ 8 (13.56%)	**16 (6.6%)** ♀ 15 (8.15%), ♂ 1 (1.69%)		**149 (61.3%)** ♀ 99 (53.80%), ♂ 50 (84.75%)		<0.001
12. In your opinion, can cardiac complications occur 10 years after radiation therapy to the chest?	**49 (20.2%)** ♀ 42 (22.83%), ♂ 7 (11.86%)	**14 (5.8%)** ♀ 12 (6.52%), ♂ 2 (3.39%)		**180 (74.1%)** ♀ 130 (70.65%), ♂ 50 (84.75%)		0.093
13. Do you think that every patient undergoing cancer treatment should have a cardiology consultation?	**232 (95.5%)** ♀ 177 (96.20%), ♂ 55 (93.22%)	**3 (1.2%)** ♀ 2 (1.09%), ♂ 1 (1.69%)		**8 (3.3%)** ♀ 5 (2.72%), ♂ 3 (5.08%)		<0.001
	Very good	Good	Average	Bad	Very bad	*P*-value of female–male

						comparisons*
14. How would you rate your health knowledge?	**30 (12.3%)** ♀ 30 (16.30%), ♂ 0 (0%)	**84 (34.6%)** ♀ 73 (39.67%), ♂ 11 (18.64%)	**108 (44.4%)** ♀ 72 (39.13%), ♂ 36 (61.02%)	**17 (7%)** ♀ 6 (3.26%), ♂ 11 (18.64%)	**4 (1.6%)** ♀ 3 (1.63%), ♂ 1 (1.69%)	<0.001

[a]The last column presents differences (P <0.05) between the answers of male and female respondents. Data was analyzed with the Fisher–Freeman–Halton test or the Mann–Whitney U-test