Cardiovascular risk factors and cardiovascular diseases in patients with most common newly diagnosed cancers in Poland. Preliminary data from the CONNECT-POL registry

Katarzyna Styczkiewicz[1, 2], Aleksandra Liżewska-Springer[3, 4], Małgorzata Lelonek[5], Maria Olszowska[6], Bartosz Krakowiak[7], Marek Styczkiewicz[8], Mateusz A Iwański[1], Andrzej Sokołowski[9], Agnieszka Kapłon-Cieślicka[10], Anna Kochańska[3,4], Ewa Lewicka[3, 4]

[1]Institute of Medical Sciences, College of Medical Sciences, University of Rzeszow, Rzeszów, Poland
[2]Subcarpathian Oncological Centre, Frederic Chopin University Clinical Hospital, Rzeszów Poland
[3]II Department of Cardiology and Heart Electrotherapy Medical University of Gdansk, Gdańsk, Poland
[4]Outpatient Cardiooncology Clinic University Medical Center in Gdansk, Gdańsk, Poland
[5]Department of Noninvasive Cardiology, Medical University of Lodz, Łódź, Poland
[6]Department of Cardiac and Vascular Diseases, Institute of Cardiology, Jagiellonian University, Medical College, John Paul II Hospital, Kraków, Poland
[7]Department of Cardiology, 4th Clinical Military Hospital, Wrocław, Poland
[8]Cardiology Department, District Hospital in Debica, Dębica, Poland
[9]Andrzej Frycz Modrzewski University in Krakow, Kraków, Poland
[10]1st Chair and Department of Cardiology, Medical University of Warsaw, Warszawa, Poland

Correspondence to:
Assoc. Prof. Katarzyna Styczkiewicz, MD, PhD, Institute of Medical Sciences, College of Medical Sciences, University of Rzeszow, Al. mjr. W. Kopisto 2a, 35–310 Rzeszów, Poland, phone: +48 17 872 11 45, e-mail: kstyczkiewicz@ur.edu.pl

DOI: 10.33963/v.phj.101666

Received:
May 21, 2024

Accepted:
July 19, 2024

Early publication date:
July 22, 2024

INTRODUCTION

Cancer and cardiovascular diseases (CVDs) share many common risk factors. CVDs are the second, after malignancy itself, leading cause of mortality in cancer patients [1]. Therefore, knowledge of the CVD burden in various types of cancer is important for appropriate risk stratification before initiating often cardiotoxic oncology therapy, which may also worsen CV risk, as well as for appropriate patient control during anticancer treatment. Some epidemiological studies [2, 3] and reports [4] have provided data on the prevalence of cardiovascular risk factors (CVRFs) and CVDs in the general population in Poland. However, surprisingly, there is a paucity of research on this topic in the cancer population, in which the burden of CVDs is of great importance in determining the choice of oncology therapy and the prognosis of patients.

The purpose of this registry was to determine the prevalence of CVRFs and CVDs in Polish patients with the four most common cancers: breast, lung, colorectal, and prostate cancers.

METHODS

CONNECT-POL is a nationwide multicenter observational registry spanning one year that was started in October 2023 under the patronage of the Polish Cardiac Society. It is still ongoing, with active recruitment in 6 centers. The inclusion criteria are adult age and newly diagnosed breast, lung, colorectal, or prostate cancer before starting systemic therapy. Patients are prospectively enrolled after giving informed consent. There are no exclusion criteria, patients disqualified from oncological treatment are also included. Patients are included in the registry during cardiology consultations when the occurrence of CVRFs (arterial hypertension, dyslipidemia, diabetes, obesity, active smoking) and CVDs (coronary disease, heart failure, previous stroke, peripheral arterial disease, venous thromboembolism) is recorded. Data on the occurrence of CVRFs and CVDs, assessed in the general population in Poland, were obtained from previous studies [2–4]. The study is conducted in accordance with the Declaration of Helsinki. The registry protocol was approved by the Bioethics Committee of the University of Rzeszow (approval no. 2023/06/0040).

Statistical analysis

Standard descriptive statistics, such as sample mean, standard deviation, frequencies, and percentages, have been used to generally

characterize the data from the registry. Differences in cardiac risk factors between primary cancer sites were tested using the chi-square test for independence for qualitative variables, and one-way analysis of variance for quantitative variables. Due to the mostly informative character of this article, only one-dimensional analyses were done. A *P*-value <0.05 was considered statistically significant. Calculations were performed with STATISTICA 13.1 software.

RESULTS AND DISCUSSION

Preliminary data involved 509 patients (69% females) with the following types of cancer: breast (284 patients, 55.8%), lung (102 patients, 20.0%), colorectal (68 patients, 13.4%), and prostate (55 patients, 10.8%). These patients were recruited during the first 6 months of the registry. The mean age was 60.2 years (13.2) in breast cancer patients, 69.2 (9.9) in lung cancer patients, 69.3 (9.9) in colorectal cancer patients, and 70.3 (7.9) in patients with prostate cancer (*P* <0.0001). Data on the presence of CVRFs and CVDs according to the cancer site are shown in Figure 1.

Generally, we observed a high prevalence of CVRFs and CVDs in cancer patients, as would be expected by looking at data from the general population. The CV burden in patients with breast cancer (98.9% were females) differed significantly from patients with lung, colorectal, and prostate cancers probably due to the younger age of the breast cancer patients. This is probably why dyslipidemia was much less frequently diagnosed in breast cancer patients compared to patients with lung, colorectal, and prostate cancer. The most frequent CVRF was arterial hypertension in all patients, and its prevalence reached 85% in colorectal cancer patients and about 70% in lung and prostate cancer patients (Figure 1). Obesity was diagnosed most frequently in breast cancer patients, but comparisons with other patients were not statistically significant. Obesity in breast cancer patients seems to have a rate comparable to that of the general population in epidemiological studies [3]; however, it should be remembered that weight loss frequently precedes cancer diagnosis. The CVRF profile in breast cancer patients was in agreement with data from the small ONCOECHO study [5], which included mainly breast cancer patients, except hypertension, which was found less frequently in the ONCOECHO study, with a frequency similar to that of the general population. Another very important finding of our analysis is the fact that after cancer diagnosis, which should stimulate positive lifestyle changes, about a third of patients are still actively smoking (Figure 1).

In the case of CVDs, it should be noted that they occur less frequently in breast cancer patients compared to other cancer patients, which was also found in other studies [6, 7]. The most noteworthy is the frequent occurrence of heart failure in prostate cancer patients, as well as in lung and colon cancer patients (Figure 1). According to our registry, almost every second patient with prostate cancer is diagnosed with heart failure, which cannot be explained solely by the older age of this group of patients. In the latest report on heart failure in the Polish population [4], the incidence of heart failure among people aged 70 to 90 years is approximately 30%, which is lower than in prostate cancer in our registry (45.5%). This should focus our attention on this population, which is characterized by frequent multimorbidities. The difference between breast, lung, prostate, and colon cancers with a higher CVD burden in the latter is likely to be driven by age, and sex, but also by risk factors shared by CVDs and malignancies, especially lung cancer, which in the majority of patients is related to smoking tobacco. The frequency of venous thromboembolism recognized before starting systemic anticancer treatment was also high, especially in lung cancer patients (6.9%). This is already a known fact, which is a result of the prothrombotic effect of cancer, with lung cancer being particularly thrombogenic.

Overall, in our registry, only 16.6% of patients had no CVRFs and no overt CVD was found in 50.5% of the patients. At least 3 CVRFs were recognized in 30.4% of patients, and at least 3 concomitant CVDs were diagnosed in 12.6% of patients.

Data are available from national databases on the incidence of CVRFs and CVDs in the population of cancer patients in various countries [6–8]. However, these studies are retrospective and include both patients before oncology therapy and patients who are already undergoing such treatment. This raises doubts, because it cannot be ruled out that the cardiotoxicity of some oncology therapies can influence the occurrence of CVDs and CVRFs.

One of the most relevant limitations of our registry is that the participating centers registered the CVRF and CVD occurrence based mainly on medical documentation or studies performed for other reasons (i.e. cardiologic consultation), and the study did not involve any pro-active diagnostic tests. However, the cross-sectional character of the study and the assessment of the subjects by specialized cardiologists limited the possibility of an incorrect diagnosis.

CONCLUSIONS

To our knowledge, the CONNECT-POL registry is currently the largest prospective Polish study that examines the scale and type of cardiovascular problems among newly diagnosed cancer patients. It is important not only in the context of optimal oncological treatment. It indicates the scale of the risk of cardiotoxicity in some oncology therapies, which increases when CVDs and/or CVRFs are present. The results we have obtained emphasize the importance of appropriate management of patients planned for oncological therapy by identifying and determining the optimal treatment for CVDs and CVRFs. Such actions should be undertaken not only by cardiologists but already at the level of primary care physicians.

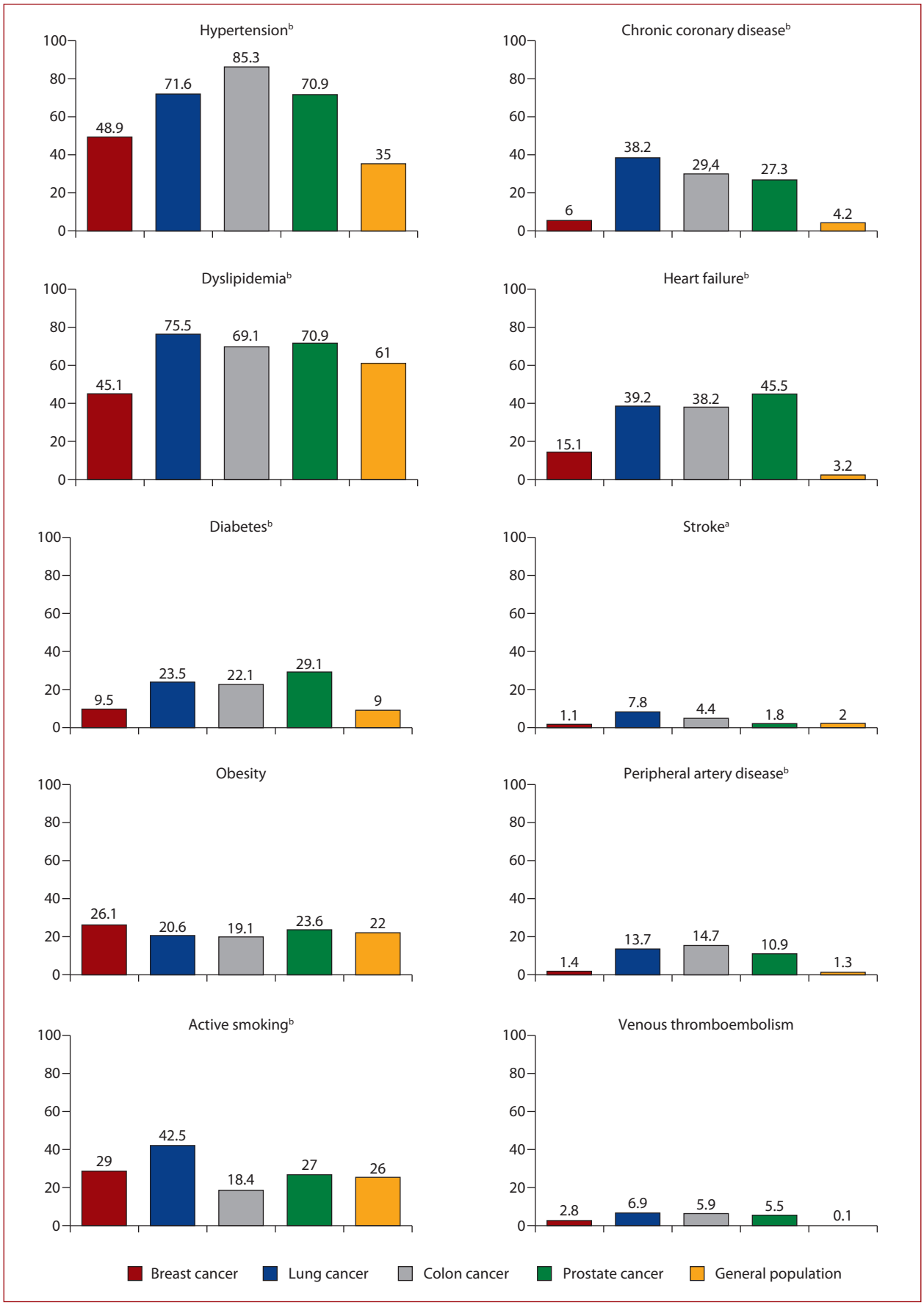

Figure 1. Prevalence of cardiovascular risk factors (left panel) and cardiovascular diseases (right panel) depending on the type of cancer in the CONNECT-POL registry. For better visualization of the problem, the data from the general Polish population are presented in black [2, 3], but they were not the subject of analysis

[a]*P* <0.01; [b]*P* <0.001

Article information

Conflict of interest: None declared.

Funding: The registry was funded by the Polish Cardiac Society.

REFERENCES

1. Beasley GS, Towbin JA. Acquired and modifiable cardiovascular risk factors in patients treated for cancer. J Thromb Thrombolysis. 2021; 51(4): 846–853, doi: 10.1007/s11239-020-02273-7, indexed in Pubmed: 32918669.
2. Chlabicz M, Jamiołkowski J, Sowa P, et al. Multimorbidity patterns in the urban population in Poland. J Clin Med. 2023; 12(18), doi: 10.3390/jcm12185860, indexed in Pubmed: 37762801.
3. Niklas A, Marcinkowska J, Kozela M, et al. Blood pressure and cholesterol control in patients with hypertension and hypercholesterolemia: the results from the Polish multicenter national health survey WOBASZ II. Pol Arch Intern Med. 2019; 129(12): 864–873, doi: 10.20452/pamw.15013, indexed in Pubmed: 31596271.
4. Lelonek M, Pawlak A, Nessler J et al. Niewydolność serca w Polsce 2014–2021. Raport Asocjacji Niewydolności Serca Polskiego Towarzystwa Kardiologicznego. niewydolnosc-serca.pl (06.02.2024).
5. Nowakowska M, Płońska-Gościniak E, Szyszka A, et al. Cardiovascular risk factors among cancer patients qualified for systemic treatment. Analysis of a cardiovascular disease-free cohort from the Polish multicentre study ONCOECHO. Arch Med Sci. 2020; 16(6): 1295–1303, doi: 10.5114/aoms.2020.100401, indexed in Pubmed: 33224328.
6. Al-Kindi SG, Oliveira GH. Prevalence of preexisting cardiovascular disease in patients with different types of cancer: the unmet need for onco-cardiology. Mayo Clin Proc. 2016; 91(1): 81–83, doi: 10.1016/j.mayocp.2015.09.009, indexed in Pubmed: 26602599.
7. Battisti NM, Welch CA, Sweeting M, et al. Prevalence of cardiovascular disease in patients with potentially curable malignancies: a national registry dataset analysis. JACC CardioOncol. 2022; 4(2): 238–253, doi: 10.1016/j.jaccao.2022.03.004, indexed in Pubmed: 35818547.
8. Caro-Codón J, López-Fernández T, Álvarez-Ortega C, et al. CARDIOTOX registry investigators. Cardiovascular risk factors during cancer treatment. Prevalence and prognostic relevance: insights from the CARDIOTOX registry. Eur J Prev Cardiol. 2022; 29(6): 859–868, doi: 10.1093/eurjpc/zwaa034, indexed in Pubmed: 33624069.