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SOCIEDADE BRASILEIRA DE CANCEROLOGIA

EDITORIAL

**Revista da Sociedade
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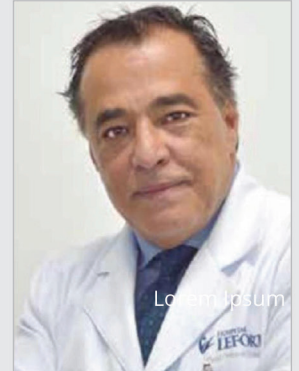
Caro leitor,

À Revista da Sociedade Brasileira de Cancerologia chega à sua última edição de 2023 com muito a comemorar: o sucesso em levar à opinião médica, informações de qualidade no que se refere aos avanços que tivemos nas últimas décadas, conquistas em pesquisa, prevenção, diagnóstico e tratamento do câncer.

Para nós foi uma grande honra e um enorme prazer poder compartilhar essas publicações e poder contar com todos os nossos colaboradores e parceiros, nosso conceituado conselho editorial e nossos leitores, contribuindo para o aperfeiçoamento profissional e pessoal na busca constante de melhores resultados na atenção ao câncer sob o fundamental olhar humanístico de nossa profissão.

Agradecemos aos autores e coautores que prontamente aceitaram o convite para contribuir com artigos de singular aprofundamento nas discussões propostas.

Boa leitura!

Ricardo Antunes
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Fundada em 25 de julho de 1946, sendo a mais antiga entidade de cancerologia da américa latina e uma das que se mantém em atividade na luta contra o câncer há mais tempo em todo mundo.

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EXPEDIENTE

SUMÁRIO

ARTIGO ORIGINAL I *ORIGINAL ARTICLE*

Survival analysis of pediatric cancer patients with leukemias and lymphomas in the State of São Paulo, from 2000 - 2022

Análise de sobrevivência de pacientes oncológicos pediátricos com leucemias e linfomas no Estado de São Paulo, de 2000 - 2022

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ABSTRACT

Introduction: The time for screening, detection and initiation of treatment is a determining factor for therapeutic management in oncology. The availability of reliable data guides public policy decisions and assesses their compliance. **Objective:** *To analyze the survival and outcomes of pediatric patients with leukemias and lymphomas from 2000 to 2022. Methods: Epidemiological, descriptive study, with data extracted from the Oncocentro do Estado de São Paulo, according to the International Classification of Childhood Cancer. The time elapsed between the first appointment and the diagnosis were evaluated; time between diagnosis and initiation of cancer treatment, as well as the survival of these patients, calculated according to the Peto-Peto test. For the survival analysis, the occurrence of death from cancer was adopted.* **Results:** *12,030 were analyzed, with a prevalence of 6,994 in males; 7,036 corresponded to leukemias. The probability that the time between doctor visit and diagnosis was greater than 30 days was 49.29% for leukemias and 76.31 for lymphomas, significant for treatment and recurrences (p<0.000) and not for sex; the time between diagnosis and treatment, greater than 60 days, was 38.04% for leukemias and 71.97% for lymphomas; significant for treatment and relapses (p<0.000) and not for sex. Not undergoing treatment was significant (p<0.0000) in the waiting time between doctor visit and diagnosis for patients with leukemias; the same for lymphomas, except for the combination of surgery, chemotherapy and radiotherapy.* **Conclusion:** *Despite the advances made, a considerable percentage of patients wait longer than expected for the diagnosis and initiation of treatment, with repercussions on the survival of these patients.*

Keywords: *Survivorship; Leukemia; Lymphoma; Hematologic Neoplasms; Child; Adolescent.*

Resumo

Introdução: O tempo no rastreio, detecção e início do tratamento é fator determinante para o manejo terapêutico em oncologia. A disponibilidade de dados confiáveis orienta decisões para políticas públicas e avalia o cumprimento das mesmas. **Objetivo**: Analisar a sobrevivência e desfechos de pacientes pediátricos com leucemias e linfomas de 2000 a 2022. **Métodos**: Estudo epidemiológico, descritivo, com dados extraídos da Fundação Oncocentro do Estado de São Paulo, segundo à Classificação Internacional de Câncer na Infância. Foram avaliados o tempo decorrido entre a primeira consulta e o diagnóstico; tempo entre o diagnóstico e o início do tratamento oncológico, bem como a sobrevivência destes pacientes, calculada conforme o teste Peto-Peto. Para a análise de sobrevivência, adotou-se a ocorrência de óbito por câncer. **Resultados**: Foram analisados 12.030, com prevalência no sexo masculino 6.994; 7.036 corresponderam as leucemias. A probabilidade do tempo entre a consulta e o diagnóstico ter sido superior a 30 dias foi de 49,29% para as leucemias e de 76,31 para os linfomas, significativo para o tratamento e recidivas (p<0,000) e não por sexo; o tempo entre o diagnóstico e tratamento, superior a 60 dias, foi de 38,04% para as leucemias e de 71,97% para os linfomas; significativo para o tratamento e recidivas (p<0,000) e não por sexo. Não realizar tratamento foi significativo (p<0,0000) na espera entre a consulta e o diagnóstico para os pacientes com leucemias; o mesmo para os linfomas, exceto para a combinação de cirurgia, quimioterapia e radioterapia. **Conclusão**: À despeito dos avanços obtidos, uma porcentagem considerável de pacientes aguarda um tempo maior do que o esperado para o diagnóstico e o início do tratamento, repercutindo na sobrevivência desses pacientes.

Palavras-chave: Sobrevivência; Leucemia; Linfoma; Neoplasias Hematológicas; Criança; Adolescente.

Introduction

Childhood cancer represents a heterogeneous group of malignant neoplasms with particularities, which is reflected in their characterization in terms of occurrence, etiology, therapy, overall survival and the risk of acute and late toxic effects related to treatment[1].

In Brazil, the estimated number of new cases of leukemia each year of the three-year period from 2023 to 2025 is approximately 11,540 cases, occupying the 10th position among the most frequent types of cancer. On the other hand, the estimated number of new cases of Hodgkin's lymphoma (HL), for each year of the same triennium, is around 3,080 cases and for Non-Hodgkin's lymphoma (NHL), it approaches 12,040 new cases[2].

The State of São Paulo, due to its demography, is home to about 24.0% of the total estimated cases and 12.0% of all deaths in the country, therefore, in absolute numbers, the state with the highest morbidity and mortality rate for cancer in this age group[3].

Leukemia, a malignant neoplasm of white blood cells, has as its main characteristic the accumulation of diseased cells in the bone marrow, which, over time, replace normal blood cells. Lymphomas, on the other hand, start in the cells of the immune system. These tumors affect mainly the lymph nodes and lymphatic tissues in general and may affect different structures of the human body[4].

It is important to highlight that, due to socioeconomic differences, not all children and adolescents benefit from advances in oncology, hematology, and precision medicine[5-6]. Thus, it is confirmed that pediatric hematological tumors can be considered as a neglected global public health disease, but subject to prevention and early detection[7].

And, in this scenario, we emphasize the importance of a national achievement that can help change this scenario, which is Law No. 12,732, of November 22, 2012, amended by Law No. 13685, of June 25, 2018, which establishes a period of up to 60 days for starting the first treatment in the Unified Health System (SUS)[8]. However, due to socioeconomic and socio-regional disparities, problems of equal access and equity are still present in Brazil. And here it is worth mentioning that in some cases, the treatment needs to be started in a shorter time interval, already in the first symptoms, as in the cases of acute leukemia, due to its own mechanisms of tumor aggressiveness and refractoriness[9].

Faced with this reality, it is understood how fundamental the quality and speed of cancer records are in order to have more precise information about each stage of this line of care[3].

Furthermore, it is evident that, depending on the childhood and adolescent neoplasm, survival rates can be compromised, even when the implemented therapy is carried out in time and appropriately, given the risk of recurrence, aggressiveness and resistance of the primary tumor. Added to this is the risk of developing a second primary tumor, with concomitant development of chronic diseases, in addition to the appearance of functional deficiencies. Thus, it is pointed out that time, in these cases, is a preponderant factor for screening, detection and initiation of treatment[10].

In view of the above, this article aimed to analyze the survival and clinical outcomes of pediatric patients with leukemias and lymphomas in the state of São Paulo.

Survival analysis of pediatric cancer patients with leukemias and lymphomas in the State of São Paulo, from 2000 - 2022

Análise de sobrevência de pacientes oncológicos pediátricos com leucemias e linfomas no Estado de São Paulo, de 2000 - 2022

Methods

Type of study

This is an epidemiological, descriptive study, with data available by the Fundação Oncocentro do Estado de São Paulo (FOSP), from January 2000 to December 2022.

Population and sample

Data from patients with an age limit of up to 19 years old who were registered in the FOSP database, coming from 77 institutions registered in the State of São Paulo, were included. The neoplasms analyzed in this study were selected according to the International Classification of Cancer in Childhood (ICCI)[11], in which they are represented by groups I and II, respectively. For the purposes of data presentation, group I was called leukemias (including myeloproliferative and myelodysplastic diseases) and group II was represented by lymphomas (including Hodgkin's and Non-Hodgkin's lymphomas and reticuloendothelial neoplasms).

Data collection procedures

Data were extracted from the FOSP database on February 7, 2023 and exported in DBS format to R[12].

Data analysis

As outcome variables, the time elapsed between the doctor visit and the oncological diagnosis, the time between the diagnosis and the beginning of the oncological treatment were evaluated. To study these periods of time, survival analysis was conducted[13-14], in which the event of interest (here considered as a failure) is the occurrence of death from cancer. In order to standardize them, it should be noted that times over 180 days were considered censorship (three times the period to start treatment after diagnosis, according to current legislation).

As independent variables, treatment was considered, isolated or in combination (surgery, surgery + chemotherapy, surgery + radiotherapy + chemotherapy, surgery + radiotherapy + chemotherapy + hormone therapy, surgery + radiotherapy, no treatment performed, other treatment combinations, chemotherapy, radiotherapy, radiotherapy + chemotherapy), gender (male, female), recurrence (yes, no). Analyzes performed were stratified by group. Furthermore, the Federation Unit (FU) of birth and residence and the Regional Health Departments (DRS) of treatment were analyzed.

For the descriptive analysis of the outcome variables, measures of central tendency, such as mean and median, and dispersion, such as standard deviation, minimum and maximum, were used. In addition, for the independent variables, the frequency and percentage of data were considered. To compare survival periods between treatments, sex and occurrence of relapse, the Peto-Peto test was used[15]. The variance of the Peto statistic (non-parametric estimation) is equal to the variance of the log-Rank, in which each time interval is weighted by the square of the survival function. Greater weight is attributed to differences (or similarities) at the beginning of the curve, where there is greater concentration of data, therefore, more informative. An S(t) weight is used in the estimator, incorporating censorship without assumptions about the time distribution. The Peto statistic approximately follows a $\chi 2$ distribution with $k - 1$ degree of freedom.

For cases in which there were differences between the evaluated groups, in the case of the treatment variable, the procedure of multiple comparisons by Benjamini-Hochberg[16] was used. All analyzes were performed considering a significance level of 5.0% and the use of the R12, version 4.1.2

Ethical aspects of the study

The research project was not forwarded to a Research Ethics Committee involving human beings (CEP), as it is a study that used data from the public domain with unrestricted access and without identifying individuals.

Results

A total of 12,030 (100.0%) cases were analyzed in groups I and II, of which 6,994 (58.1%) were male and 5,036 (41.9%) were female. Also, 7,036 (58.5%) corresponded to all grouped cases of leukemias, 546 (4.5%) of myelodysplastic diseases (CICI – IA, IB, IC, ID, IE) and 4,448 (37.0%) to lymphomas and reticuloendothelial neoplasms (CICI – IIA, IIB, IIC, IID, IIE).

The majority of cases, when the Federative Unit (FU) of birth was analyzed, was reported as being from the state of São Paulo 9,476 (78.8%), followed by Minas Gerais 673 (5.6%) and Bahia 221 (1.8%). However, regarding the state of residence, 10,448 (86.8%) lived in São Paulo, 616 (5.1%) in Minas Gerais and 84 (0.7%) in Goias. The Regional Health Departments (DRS) with the highest percentage of assistance were DRS 01 (Greater São Paulo) with 4,309 (41.2%), followed by DRS 07 (Campinas) with 1,192 (11.4%) and DRS 17 (Taubaté) with 779 (7.5%).

As for the overall average time between doctor visit and diagnosis, it is noteworthy that this was 16.81 ± 53.56 [1;971]; of these, 5.0% waited more than 66 days, 1.0% more than 239 days. Due to data variability, the median was calculated, being 82 days overall and, by groups, 29 days for I and 180 days for II.

Figure 1 highlights the survival curves of these patients, by groups (I and II), considering the cut-off of 180 days, while waiting for the establishment of the oncological diagnosis after the doctor visit and the beginning of the treatment.
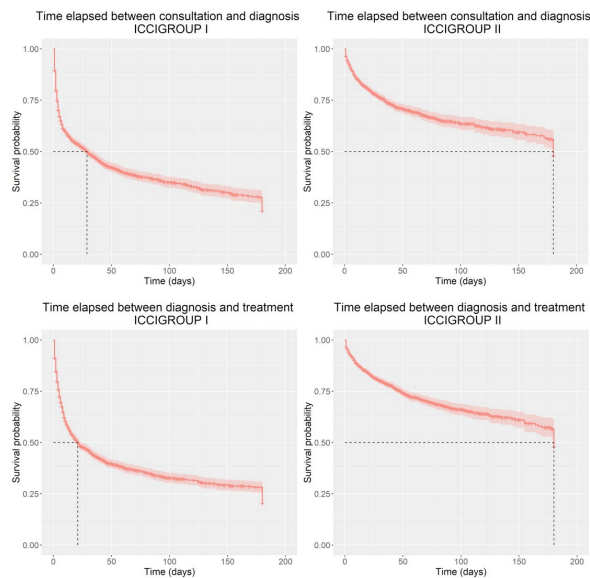
Figure 1. Survival curve of patients in relation to the time elapsed between doctor visit and diagnosis, and between diagnosis and initiation of treatment, by neoplasm group.
Caption: Myeloproliferative leukemias and myelodysplastic diseases (ICCI group I); lymphomas and reticuloendothelial neoplasms (ICCI group II).

The curves show different behavior of different groups of neoplasms. For the leukemia group, the probability of survival of 50.0% was around 20 to 30 days and, for patients with lymphomas, in 180 days, more than 50.0% were still alive (**Figure 1**). The overall probability that the time between doctor visit and diagnosis was greater than 30 days was 0.6165 [95%CI:(0.6303;0.6030)]. The probability for group I was 0.4929 [95%CI:(0.4733;0.5133)] and 0.7631 for group II [95%CI:(0.7452;0.7813)].

The overall average time between diagnosis and initiation of cancer treatment was 20.56 ± 57.34 [1;971]; of these, 5.0% waited more than 80 days, 1.0% more than 297 days. In less than 25 days, patients in group I had a 50.0% probability of survival in this waiting time, while those in group II, in 180 days, more than 50.0% were still alive.

The overall probability that the time between diagnosis and treatment was greater than 60 days was 0.5493 [95%CI:(0.5338;0.5653)]. The probability for group I was 0.3804 [95%CI:(0.3584;0.4037)] and for group II it was 0.7197 [95%CI:(0.6985;0.7414)].

Figure 2 shows the survival curves by group and sex.
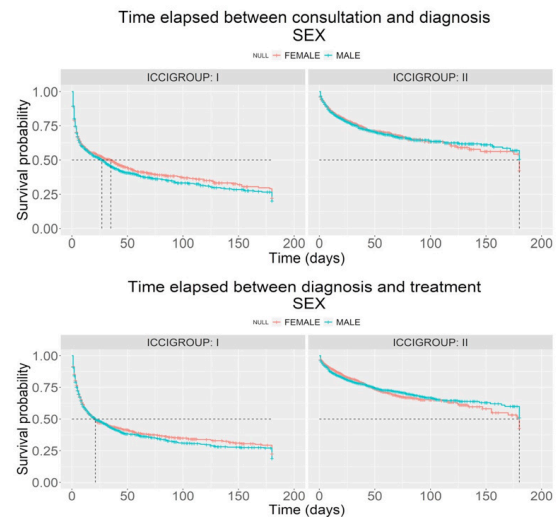
Figure 2. Survival curve of patients in relation to the time elapsed between doctor visit and diagnosis, and between diagnosis and initiation of treatment, by gender.
Caption: Myeloproliferative leukemias and myelodysplastic diseases (ICCI group I); lymphomas and reticuloendothelial neoplasms (ICCI group II).
Note: Data extracted from FOSP, 2023.

Distinct survival curves can be seen in groups I and II when analyzed by sex. This was relatively better for females, except for those in group II after approximately 120 days, where there is an inversion. In general, around 25 to 30 days, the survival of patients in group I drops to 50.0% while waiting for the oncological diagnosis, being more pronounced in males and, even lower, around 20 days, for those in group I, awaiting treatment.

There was a significance between the waiting time between the doctor visit and the diagnosis of the patients, when analyzing the treatment and the recurrences of the disease for both groups (p<0.000), but not for the different sexes (p=0.7396 for group I and p=0.9028 for group II).

The most common treatment, in both groups, was chemotherapy 8,002 (66.5%), followed by the combination of radiotherapy plus chemotherapy for 1,606 (13.3%) and, mostly, carried out in a hospital environment. A considerable number of patients, 830 (6.9%), did not undergo treatment or subsequent follow-up.

**Survival analysis of pediatric cancer patients with leukemias
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e linfomas no Estado de São Paulo, de 2000 - 2022*

Figure 3 shows the survival curve of these patients while waiting for the start of treatment, in the different groups (I and II), in a 180-day period.
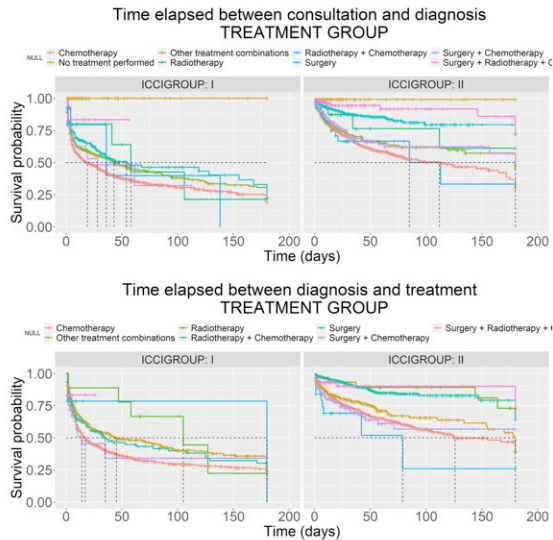
Figure 3. Survival curve of patients in relation to the time elapsed between the doctor visit and the diagnosis, and between the diagnosis and initiation of treatment, by groups of neoplasms and treatments performed.
Caption: Myeloproliferative leukemias and myelodysplastic diseases (ICCI group I); lymphomas and reticuloendothelial neoplasms (ICCI group II).
Note: Data extracted from FOSP, 2023.

It is observed that the survival curve of the patients while waiting for the beginning of the treatment also differed in the two groups. In group I, those who needed chemotherapy alone had a 50.0% reduction in survival at around 25 days. In group II, the survival curves are better and, for patients who underwent surgery as an isolated therapy, it initially suffered a more abrupt drop, reaching around 50.0% close to 60 days.

The Peto-Peto test showed significance for the waiting time between the diagnosis and the beginning of the treatment of the patients when analyzing the treatment and disease recurrences (p<0.000), but it did not show significance by gender (p=0.3732 for the group I and p=0.4201 for group II).

Regarding the differences between the evaluated groups, in the case of the treatment variable, the data are presented in **table 1**.

It is noted that not performing any treatment, when compared with the treatments performed, was significant (p<0.0000) in the period between doctor visit and diagnosis in the leukemia group; the same pattern was repeated for lymphomas, except when compared with the combination of surgery,

chemotherapy, and radiotherapy (p=0.1627) (Table 1). The survival curves of the patients, when they did not undergo any treatment within a period of 180 days, were better than the others, with those related to chemotherapy representing greater losses.

And, in the waiting period between diagnosis and treatment, when comparing the treatments performed among themselves, there was no significant difference between them, except between other combinations of treatment and chemotherapy (p=0.0000) in the leukemia group and, in the of lymphomas, it is noteworthy that surgery was not significant only in relation to the combination of surgery and chemotherapy (p=0826) (Table 1). On the other hand, the survival curves of the patients, when the surgical treatment was implemented, showed more accentuated drops for patients with lymphomas.

Figure 4 shows the survival curves for patients with neoplasms in the different groups, analyzing recurrences.
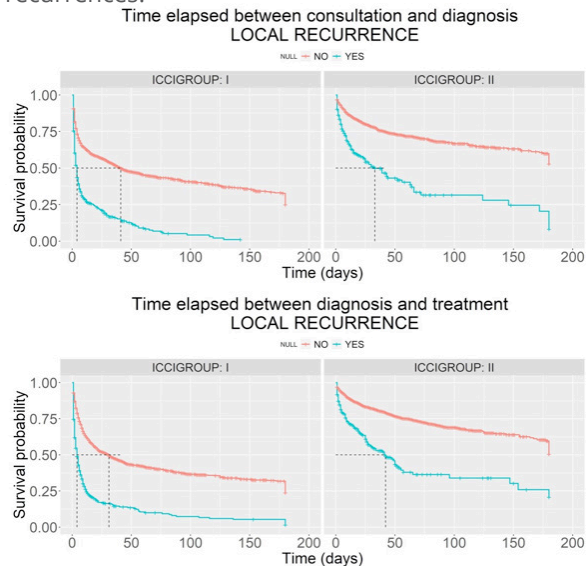
Figure 4. Comparative analysis between the time elapsed between first visit and diagnosis and between diagnosis and treatment according to local recurrence by neoplasm group. **Caption**: Myeloproliferative leukemias and myelodysplastic diseases (ICCI group I); lymphomas and reticuloendothelial neoplasms (ICCI group II).
Note: Data extracted from FOSP, 2023

In the figure curves, in the upper quadrants, when analyzing the influence on patient survival and local recurrences, the neoplasms in group I tended to appear earlier, reaching 25.0% around 10 days (Figure 4).

According to the last registered information, 6,264 (52.1%) of the patients were alive, without evidence of the disease, 2,134 (17.7%) were alive with cancer, 3,239 (26.9%) had died due to cancer and 393 (3.3%) for other causes.

Table 1. Multiple comparisons between the ICCI groups (I and I¬I), at different times (Doctor visit - Diagnosis; Diagnosis - Treatment) for the treatments performed (n=12,030). São Paulo. 2023.

Variables	Surgery	Surgery + Chemotherapy	Surgery + Radiotherapy + Chemotherapy	No treatment performed	Other treatment combinations	Chemotherapy	Radiotherapy
Doctor visit Diagnosis - ICCI							
Surgery + Chemotherapy	0.6992	-	-	-	-	-	-
Surgery + Radiotherapy + Chemotherapy	0.8348	0.5761	-	-	-	-	-
No treatment performed	0.0000*	0.0000*	0.0000*	-	-	-	-
Other treatment combinations	0.8666	0.8348	0.5761	0.0000*	-	-	-
Chemotherapy	0.6992	0.8348	0.4202	0.0000*	0.0022*	-	-
Radiotherapy	0.9445	0.8348	0.8348	0.0000*	0.8666	0.6992	-
Radiotherapy + Chemotherapy	0.9526	0.6992	0.6757	0.0000*	0.4829	0.0002*	0.9526
Doctor visit Diagnosis - ICCI							
Surgery + Chemotherapy	0.4177	-	-	-	-	-	-
Surgery + Radiotherapy + Chemotherapy	0.0001*	0.0002*	-	-	-	-	-
No treatment performed0.	0000*	0.0001*	0.1627	-	-	-	-
Other treatment combinations	0.5701	0.4866	0.0001*	0.0000*	-	-	-
Chemotherapy	0.9451	0.0445*	0.0000*	0.0000*	0.1576	-	-
Radiotherapy	0.1766	0.4177	0.1494	0.0061*	0.3145	0.1494*	-
Radiotherapy + Chemotherapy	0.0002*	0.0000*	0.1894	0.0152*	0.0000*	0.0000*	0.4342
Diagnosis_Treatment ICCI							
Surgery + Chemotherapy	0.7722	-	-	-	-	-	-
Surgery + Radiotherapy + Chemotherapy	0.8526	0.7722	-	-	-	-	-
Other treatment combinations	0.9434	0.6180	0.8326	-	0.7722	-	-
Chemotherapy	0.7722	0.8326	0.7722	-	0.8526	0.7722	-
Radiotherapy	0.8326	0.6223	0.8326	-	0.9434	0.6180	0.8326
Radiotherapy + Chemotherapy	0.8326	0.7620	0.8326	-	0.7722	0.8326	0.7722
Diagnosis_Treatment - ICCI							
Surgery + Chemotherapy	0.0826	-	-	-	-	-	-
Surgery + Radiotherapy + Chemotherapy	0.0005 *	0.0076 *	-	-	-	-	-
Other treatment combinations	0.0108 *	0.1362	0.0277 *	-	-	-	-
Chemotherapy	0.0040 *	0.1032	0.0169 *	-	0.2410	-	-
Radiotherapy	0.0075 *	0.0286 *	0.9070	-	0.0299 *	0.0112 *	-
Radiotherapy + Chemotherapy	0.0000 *	0.0000 *	0.4835	-	0.0000 *	0.0000 *	0.7110

Note: *: Benjamini-Hochberg test

Discussion

In this study, 12,030 (100.0%) cases of neoplasms related to groups I (leukemias) and II (lymphomas) were analyzed, being numerically higher in males (58.1%), a result similar to those observed in national and international studies. A study with a similar population[17], where 92,085 cases of patients with leukemias and 33,273 with lymphomas were analyzed, showed that the incidence was slightly higher in males and this difference is greater in a certain age group.

In relation to leukemias, lymphoid leukemias (4,991, 41.5%) were the most diagnosed, followed by acute myeloid leukemias/acute non-lymphocytic leukemias (1,755, 14.6%), data also corroborated by the literature. According to a study that analyzed different leukemias, the authors observed a higher prevalence of cases of lymphoid leukemia, followed by acute myeloid leukemia[18].

Burkitt's lymphoma (1,360, 11.3%) (**Table 1**), data that are convergently related to the findings in the international literature[19].

Survival analysis of pediatric cancer patients with leukemias and lymphomas in the State of São Paulo, from 2000 - 2022

Análise de sobrevivência de pacientes oncológicos pediátricos com leucemias e linfomas no Estado de São Paulo, de 2000 - 2022

Regarding the FU of birth, the state of São Paulo 9,476 (78.8%) was the most prevalent, followed by Minas Gerais 673 (5.6%) and Bahia 221 (1.8%). Following the same logic, regarding the UF of residence, 10,448 (86.8%) lived in São Paulo, 616 (5.1%) in Minas Gerais, but here we had another state mentioned, where 84 (0.7%) patients lived in Goias. These data are corroborated with those of a study that analyzed cancer care among children and adolescents in the national territory and, consequently, the origin-destination flow between the FU of birth and the FU of residence[20]. The authors showed that six out of 10 children are assisted locally, especially in the states of São Paulo and Minas Gerais, and most of them had access to medical assistance in the same health regions where they lived.

When the DRS were analyzed, the highest percentage of attendance was in DRS 01 (Greater São Paulo) with 4,309 (41.2%), followed by DRS 07 (Campinas) with 1,192 (11.4%) and DRS 17 (Taubaté) with 779 (7.5%). These data show the strategic importance of the DRS and its correlation with patient travel flows. However, it is important to emphasize that a study that mapped these flows showed that around 15.0% of the origin-destination displacement takes place outside the State of São Paulo, thus signaling that these flows need to be adjusted[20].

As for the overall average time between doctor visit and diagnosis, it is noteworthy that this was 16.81 ± 53.56 [1;971]; of these, 5.0% waited more than 66 days, while 1.0% of these customers waited more than 239 days. According to a study carried out in the State of Paraíba[21], with a sample of 104 children with hematologic malignancies aged 0 to 19 years, this time for children with hematologic tumors was, on average, 6.1 days (± 9.5). Both the sample size and the coverage of the service network may have been the causes of this difference.

When analyzing the patients' survival curves (Figure 1 and 2), the time for leukemias is extremely relevant, as in less than 25 days there was a 50.0% drop in survival, a different result for patients with lymphomas, which in 180 days did not reach this mark (more than 50.0% were still alive).

The overall average time between diagnosis and initiation of cancer treatment was 20.56 ± 57.34 [1;971]; of these, 5.0% waited more than 80 days, while 1.0% of this public waited more than 297 days. Result similar to the time between doctor visit and diagnosis, waiting for the start of treatment, in less than 25 days it was observed that for leukemias there was a 50.0% reduction in survival (**Figure 2**) and, for patients with lymphomas, in 180 days, more than 50.0% were still alive.

In a study that analyzed the epidemiological profile of children and adolescents attended at a reference center in the west of the state of Pará, the most frequent neoplasms were leukemias, the waiting time between the onset of symptoms and the diagnosis was from one to two months and, for the start of treatment, an average of 15 days[22], a result different from those presented here, considering the number of doctor visits, sex and place of treatment and origin, that is, the scope.

In general, the delay in screening, diagnosis and treatment of neoplasms can be analyzed based on time intervals. The first, related to the patient, when the first symptoms appear, and the others, related to the health system, encompassing the patient's transfer from Primary to Tertiary Care[23].

Analyzing the results, where the general probability of the time between the doctor visit and the diagnosis having been greater than 30 days was 61.65% and, between the diagnosis and treatment having been greater than 60 days was 54.93%, we still have many patients who still wait longer than expected within the state of São Paulo, according to current legislation. Understanding where the greatest delay occurs is relevant for an assessment of the Care Network for these patients.

These data reflect serious implications in the short, medium and long term, since the longer the delay in terms of early detection of the neoplasm, through doctor visit and diagnosis and its relationship with local recurrence of the tumor (progression or non-progression of the neoplasm), lower are the chances of cure[24].

In a study published in 2022[25], 74.0% of children and adolescents between 0 and 19 years of age underwent treatment early, that is, before the maximum period stipulated by current legislation in the country[8]. And, in another study developed by national researchers[26], it was shown that mortality rates, adjusted for age, showed a tendency towards stability throughout the country.

Delays in starting cancer treatment were also observed in developed countries such as Canada, as the mean time from the appearance of the first signs and symptoms to the start of treatment was 173 days[27]. Despite the analyzed time gap, it is important to emphasize that the delay in starting treatment is decisive in having a major impact on the course of treatment that the patient will undergo, as well as on their morbidity and mortality rates[28]. In another study, 25.0% of children and adolescents with hematological malignancies (leukemias and lymphomas) died, 1.0% before starting treatment[29].

The findings regarding the choice of chemotherapy as the first line of treatment is a reality in treatment protocols for both leukemias and lymphomas, when compared with surgery, radiotherapy and the combination of other therapeutic approaches[30].

For patients who did not undergo treatment during the analyzed period (180 days), the probability of survival was higher in both groups (**Figure 3**). Among leukemias, there was no significant difference between the treatments implemented, in the period under analysis, which showed a better survival curve for patients and for lymphomas, it is noteworthy that surgery was not significant only in relation to the combination of surgery and chemotherapy, with worse survival curves.

Survival of patients in group I is lower than in group II, regarding the time between diagnosis and initiation of treatment (Figure 3). A study published in 2022 showed that mortality rates from leukemia remained stable over the years 2001 to 2019 and, on the other hand, for lymphomas, important reductions in the age group from 0 to 20[31]. And, in another study, it was observed that there was a significant reduction in the percentage of mortality from leukemia and lymphomas in children and adolescents in the period between 1980 and 2015[32].

It is known that the initiation of cancer treatment and, consequently, its continuation will determine the quality of life of this clientele over time, in addition to interfering with the risk of relapses and the refractoriness of the disease[33]. Within this logic of reasoning, it is inferred that the delay in therapy can happen due to several factors, such as uncertainty in the diagnosis, added to the long queues for the first doctor visit with a specialist, together with the decentralization of care, which entails intercity or interstate travel and referrals to specialized counter-referral services[34].

One of the biases of this study is related to sampling, since only part of the population was studied. Another, of interpretation, since not all institutions that treat pediatric cancer patients in the state are registered. And, the years 2017, 2018, 2019, 2020, 2021 and 2022 still have ongoing cases, according to FOSP and are subject to periodic update.

Although we consider cases of neoplasms by municipality of residence, there may be cases in which families change cities in order to stay close to the place where the child can receive specialized treatment.

Conclusions

The patient survival curves were different for the two groups. Patients in group I (leukemias) had a survival probability of 50.0% in an approximate period of 25 days; while those in group II (lymphomas), 50.0% were alive in 180 days (censored).

The probability that the time between doctor visit and diagnosis was greater than 30 days was 0.4929 [95%CI:(0.4733;0.5133)] for the leukemia group and for the lymphoma group 0.7631 [95%CI:(0.7452;0.7813)]. This difference was significant when analyzing treatment and disease recurrences for both groups (p<0.000).

And, the probability that the time between diagnosis and treatment was greater than 60 days was 0.3804 [95%CI:(0.3584;0.4037)] for the leukemia group and, for the lymphoma group, of 0.7197 [95%CI:(0.6985;0.7414;)]. Significant difference when analyzing treatment and disease recurrences (p<0.000).

None of the analyzed times (appointment and diagnosis and between diagnosis and treatment) showed statistical significance regarding the sex of patients in both groups.

These data show that we still have a considerable percentage of patients with leukemias, and an even greater number of patients with lymphomas, waiting above what is expected. However, the waiting time may be essential for the outcome of cancer treatment and the findings show that they are still outside what is recommended by current legislation, even in a state with a structured Oncology Care Network.

The most used treatment, in both groups, was chemotherapy 8,002 (66.5%), which is still the first option in the different phases of treatment of leukemias and lymphomas.

This research cut was carried out in the state of São Paulo, where there is a concentration of services and high technological density. However, actions are needed to regulate the flow of these patients, at the different levels of complexity of the system, considering the regulation in view of the recognition of differences in severity and need for early intervention for different neoplasms.

Complementary studies to this one, which evaluate economic, social and technology indicators available in the oncology network, can contribute to achieving better survival rates for patients with pediatric cancer.

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Análise de sobrevivência de pacientes oncológicos pediátricos com leucemias e linfomas no Estado de São Paulo, de 2000 - 2022

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Conflict of interests

The authors report the absence of any type of conflict of interest.

ARTIGO ORIGINAL I *ORIGINAL ARTICLE*

Mortality from colorectal cancer in Brazil in the last three years (2019-2022)
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ABSTRACT

Justification*: Distribution of colorectal cancer (CRC) in the regions of Brazil is fundamental for planning and actions of health services. **Objectives**: To analyze CRC mortality in Bahia according to sex and age group in the period from 2019 to 2022. **Method**: Descriptive, retrospective study carried out from the DataSUS Hospital Information System, between Sep/2019 and Sep/2022. total and mean value per hospitalization, deaths and mean mortality rate (MT). Surgical variables were: total number of procedures, states with the highest metrics and year with the highest number for CCR. **Results**: 167,055 hospitalizations with leadership in the Southeast. The age group from 60 to 69 years old stood out. Regarding the nature of care, the majority (97,643) were urgent. Average length of stay in hospital was 4.8 days. Mortality rate was 8.1, being higher in the North (10.85). There were 13,537 deaths. The Southeast had the highest number of deaths (7,386), most of which were male. for surgeries performed to remove CRC, there was a general total of 26,571 procedures. São Paulo (SP) had the highest total number of procedures. It increased the number of colorectal surgeries over the years, led by SP. **Conclusion**: There was an increase in CRC mortality, with the North having the highest rate. It is necessary to increase public policies aimed at CRC screening, according to the scenario of different Brazilian regions.*

Keywords*: Neoplasms of the anus; Colorectal Neoplasms; epidemiology; surgery.*

INTRODUCTION

Colorectal cancer (CRC) encompasses tumors that occur in the initial part of the large intestine, rectum, anus, and anal canal. It is one of the most common malignant tumors worldwide, ranking as the third most common in men and the second most common in women. In Brazil, it is considered the fourth most frequent type of neoplasia. When analyzing the incidence by geographical region, colon and rectal cancer in men is the second most incident in the Southeast (28.62/100,000) and Midwest (15.40/100,000) regions and the third most frequent in the South (25.11/100,000) region. In women, it is the second most frequent in the Southeast (26.18/100,000) and South (23.65/100,000) regions and the third most incident in the Midwest (15.24/100,000), Northeast (10.79/100,000), and North (6.48/100,000) regions [4].

The development of colorectal cancer involves various factors such as: age equal to or above 50 years, obesity, physical inactivity, prolonged smoking, high consumption of red and/or processed meat, low calcium intake, excessive alcohol consumption, and a diet low in fruits and fibers. There are also hereditary factors such as a family history of colorectal cancer and/or adenomatous polyps, genetic conditions like familial adenomatous polyposis and hereditary non-polyposis colorectal cancer, a history of chronic inflammatory bowel disease (ulcerative colitis or Crohn's disease), and type 2 diabetes [1].

CRC is often curable when detected early. It typically responds well to preventive measures due to the long carcinogenic period, which lasts around 10 years [5]. Although its mortality rate has been decreasing over the years, largely attributed to screenings, early polyp removal, and improved treatments, its incidence has been increasing in adults under 55 years of age [2]. Therefore, analyzing the dynamics of CRC incidence and mortality in the regions of Brazil is of fundamental importance in establishing effective healthcare management, planning, and actions to address specific and targeted demands. Thus, this study aims to analyze CRC mortality in the state of Bahia, considering sex and age groups, from 2019 to 2022.

METHODOLOGY

This is a descriptive, cross-sectional, retrospective study conducted using the Hospital Information System (SIH/SUS) from DataSUS, covering the period from September 2019 to September 2022. The variables under consideration included the number of hospitalizations, gender, race/ethnicity, age group, type of care, average length of stay, total cost, average cost per hospitalization, deaths, and the average mortality rate (MR) related to colorectal cancer.

In addition, surgical variables were analyzed, including the total number of procedures, states with the highest metrics, and the year with the highest relative numbers of colorectal cancer-related AIH (Authorization for Hospital Admission) approvals by Federative Unit according to the region-based DataSUS dataset for the period from September 2019 to September 2022. The analysis was based on the following procedures: 0416050026 partial colectomy (hemicolectomy) in oncology, 0416050034 total colectomy in oncology, 0416050050 local excision of rectal tumor in oncology, 0416050069 total proctocolectomy in oncology, 0416050077 abdominal retossigmoidectomy in oncology, 0416050085 abdominoperineal retossigmoidectomy in oncology, 0416050115 total proctocolectomy in oncology.

RESULTS

There were 167,055 hospitalizations during the described period, with 2021 having the highest absolute number of admissions (54,451). March 2022 had the highest rate (5,162) compared to the other months, ahead of May 2022 (5,132) and July 2022 (5,095). The lowest numbers were seen in June 2020 (3,814) and April 2020 (3,850). The Southeast region led in hospitalizations with 73,517 cases, with São Paulo accounting for 35,916 cases. In contrast, the North region reported only 3,208 cases, with Amapá having the lowest number of occurrences (59). In the Northeast region, there were 22,731 hospitalizations, led by Pernambuco (5,909) and Rio Grande do Norte (4,231). Bahia ranked third with 4,076 cases.

Regarding gender, the ratio was roughly equal, with approximately a 1:1 ratio (M 83,103 vs. F 83,952), a pattern consistent across all regions. The regions with the most significant disparities were the South (M 29,461 vs. F 26,556) and Northeast (M 10,141 vs. F 12,549), and this ratio remained consistent throughout the entire period.

In terms of race/ethnicity, 92,303 individuals identified as white, and 48,925 as mixed race (pardos), with the highest numbers. Black (6,649), yellow (2,089), and indigenous (56) races were reported with lower numbers. In total, 17,003 chose not to identify their race. The majority of white individuals were in the South (48,022) and Southeast (38,547) regions, while for mixed-race individuals, it was the Southeast (21,520) and Northeast (15,866) regions.

The age group of 60 to 69 years had the highest number of cases at 50,548, followed by 50 to 59 years (39,999) and 70 to 79 years (33,266). The least affected age group was under 1 year (54). There was an increase across age groups up to 60 to 69 years,

with a decrease in the older age groups (80 years or more: 10,014). The Southeast region reported the most cases in the 60 to 69 age group (23,395), followed by the South (17,110) and Northeast (6,038).

Regarding the type of care, 69,412 were elective, and 97,643 were urgent. The peak of urgency was in the Southeast region (42,881) and the capital, São Paulo (21,509). Next, the South region had 22,161 elective cases and 33,856 urgent cases. The average length of hospital stay was 4.8 days. In the Northeast region, the average was 5.1 days, with Sergipe having the second-highest average in the country (9.6), second only to Pará (10.3). The South had the lowest average at 3.8 days.

Regarding public funds allocated, the period accumulated approximately $400 million in total costs. In 2021, $129.73 million was spent, followed by $119.85 million in 2020. Up to September 2022, $108.4 million had been spent. The South and Southeast regions led in expenditures with $112.1 million and $188.4 million, respectively. The Northeast region funded approximately $64 million, with Bahia being the state with the highest expenditures ($16.77 million).

The average cost per hospitalization in the described years was $2,378.63. The state of Sergipe had the highest average cost per hospitalization at $4,157.52, while the lowest cost was in the state of Acre ($1,654.07). The mortality rate can be seen in **Figure 1**, with a rate of 8.1 over the period, remaining consistent over the years.

The highest rate was in the North region (10.85), and the lowest was in the South region (5.39). In the Northeast region, the rate was 7.91, with the highest values in Sergipe (13.62) and Bahia (12.73).

There were 13,537 deaths in the period, led by 2021 with 4,454 cases. The Southeast region had the highest number of deaths (7,386), while the lowest number was reported in the North region (348). The Northeast region had 1,799 cases, with the majority in Bahia (519) and the lowest in Sergipe (53). In terms of gender, there were 6,547 male and 6,990 female deaths, with a nearly 1:1 ratio for both hospitalizations and deaths.

White race led in deaths with 6,627 cases, followed by mixed race (pardos) with 4,110. October 2021 had the most deaths with 405 cases, including 209 white and 127 mixed-race individuals. In terms of age, 60 to 69 years and 70 to 79 years led in deaths with 3,870 and 3,492 cases, respectively. The 50 to 59 age group had 2,543 cases, followed by the 40 to 49 age group with 1,080 cases. Regarding the type of care, 11,111 deaths were due to urgent care, while only 2,426 were elective (2.18:1).

Regarding surgeries for colorectal cancer removal, there were a total of 26,571 procedures. The state with the highest total number of procedures was São Paulo, with 8,729, followed by Minas Gerais (3,294) and Rio Grande do Sul (2,880). The states with the lowest total number of procedures were Roraima and Amapá, with only 27. There was an in
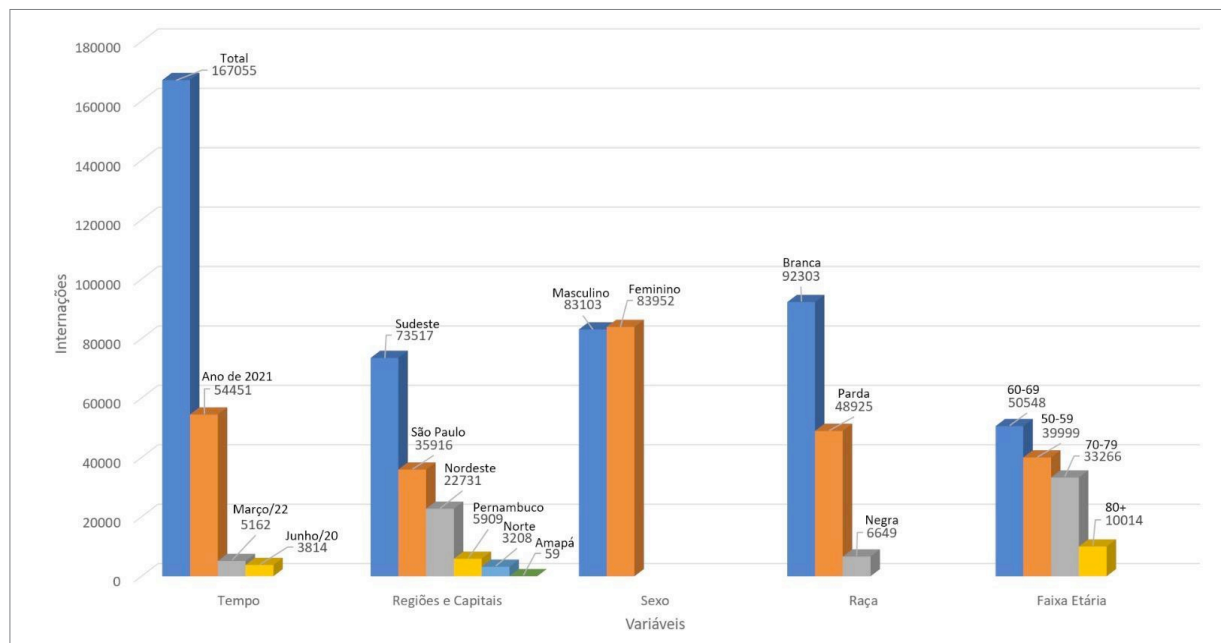
Figure 1: Colorectal cancer mortality in Brazil (2019-2022)

crease in the number of colorectal surgeries over the years (2019 - 2,964; 2020 - 8,247; 2021 - 8,457; 2022 - 6,903), with São Paulo leading in the metric in all years, followed by Minas Gerais. Of the total, 16,717 procedures were elective, and 9,850 were urgent, with 2021 having the highest number of procedures.

DISCUSSION

Despite the technological and scientific advancements in the prevention, diagnosis, and treatment of colorectal cancer (CRC), it remains a significant cause of death, with estimated data from the World Health Organization (WHO) indicating 880,000 global deaths in 2018, second only to lung cancer. Its importance is directly related to the public costs allocated, which amounted to 400 million reais in the period from September 2019 to September 2022 in Brazil [9].

Mortality and incidence rates of CRC follow the variation in the Human Development Index (HDI), which typically exhibits three patterns: low rates in developed countries such as the United States, France, and Japan; an increase in the number of cases in economically transitioning countries like Brazil, with reduced mortality but an increase in incidence, and high HDI countries experiencing increased rates due to population aging [9]. Thus, the results found here point to the second pattern, reflecting an increase in mortality and incidence rates of CRC in the national territory. Regional discrepancies can be noted in these rates, with the highest mortality rate in the North region (10.85) and the lowest in the South region (5.39), in line with the socioeconomic differences involved in this balance.

Over a lifetime, the probability of developing CRC is estimated at 4-5%, considering risk factors such as lifestyle, personal habits, age, and a history of chronic diseases. With the exponential growth of the elderly population in Brazil, there is a corresponding increase in CRC incidence, confluent with the results presented here, with the 60 to 79 age group leading in deaths and incidence rates, corroborating with the current scientific literature [10].

Women over 65 years of age have higher mortality and lower five-year survival rates for CRC compared to the male population. This occurs because right proximal colon cancer is well described as a more aggressive tumor compared to left distal colon cancer, with women being the most frequently affected by the aggressive tumor. Additionally, more advanced colon tumors are often flat, whereas distal tumors are polypoid and more easily distinguishable by colonoscopy. The female colon is longer, contributing to a lower detection rate during colonoscopy [8].

However, when analyzing the sex ratio regarding hospitalizations and deaths due to CRC, there is a close-to-1:1 relationship. In terms of the absolute number of deaths during the period, the female gender showed 6,990 cases against 6,547 male cases. This demonstrates the uniqueness of the Brazilian epidemiology of CRC within the national territory, in contrast to the rest of the world. The increasing incidence of this type of cancer in younger populations, along with ongoing knowledge about the factors involved in the genesis of this pathology, highlights the focus on CRC screening and prevention programs [3].

It's also important to consider that the analyzed period partially coincided with the COVID-19 pandemic, which had its first confirmed case in Brazil on February 26, 2020, as reported by the Ministry of Health [11]. This reduced public access to early screening. Studies on the impact of COVID-19 on CRC diagnosis found that, compared to the pre-pandemic period, there was a decrease in the number of colorectal cancer cases due to the temporary interruption of screening programs, such as colonoscopies, indicating that despite an increase in these numbers, the rate of underreporting remains high [12].

Colorectal cancer is the third most common cancer in the world, with increasing incidence and mortality rates globally. Brazil follows this trend with an increase in CRC incidence from 2019 to 2022, accompanied by the number of both palliative and curative surgeries. The state of São Paulo leads in the absolute number of these surgeries performed, which may be related to risk factors for the development of this neoplasia. These factors include age, family history, lifestyle, medical conditions, and race and ethnicity. For example, the risk of developing colorectal cancer increases with age, and individuals with a family history of the disease or certain hereditary genetic conditions are at higher risk. Lifestyle factors such as a diet high in red and processed meats, low intake of fruits and vegetables, physical inactivity, obesity, smoking, and excessive alcohol consumption can increase the risk of colorectal cancer. Certain medical conditions, such as inflammatory bowel disease (IBD), type 2 diabetes, and some hereditary syndromes, can also increase the risk of colorectal cancer. Racial and ethnic factors play a role, as African Americans have a higher incidence of colorectal cancer than other racial or ethnic groups in the United States[7].

CONCLUSION

In light of the results presented, considering the underreporting during the pandemic, there has still

been an increasing trend in colorectal cancer mortality in Brazilian states, with the northern region standing out with the highest mortality rate. It was evident that in the age group between 60 and 69 years, the highest incidence and death rates from CRC occurred, with women over 65 years showing higher mortality and lower survival rates. However, the gender ratio in terms of the death rate had an equivalent relationship. Therefore, there is a clear need for the enhancement of public policies focused on colorectal cancer screening, in line with the different regional scenarios in Brazil. It is necessary to consider the frequent changes occurring in the population's habits, socio-economic and cultural development, and invest in early diagnosis, following a screening protocol aimed at the population in the mentioned age group in Basic Health Units, as well as preparing hospitals to operate within adverse scenarios such as a pandemic, so that incidence and mortality rates can decrease in the country.

DISCLAIMERS

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ARTIGO ORIGINAL I *ORIGINAL ARTICLE*

Epidemiological analysis of malignant prostate neoplasia in Salvador: a longitudinal study in the last decade

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ABSTRACT

Introduction: *Malignant neoplasm of the prostate represents an important cause of morbidity and mortality in men worldwide. Risk factors include advanced age, family history, ethnic origin, diet and physical inactivity. Despite the reduction in the mortality rate over the last few decades, this neoplasm remains a significant public health challenge. Treatment involves surgery, radiotherapy, chemotherapy and targeted therapies, providing better results and quality of life for patients.*
Objectives: *To describe the clinical and epidemiological characteristics of malignant prostate neoplasia between 2013 and 2022 in Salvador-BA.* ***Methods***: *Descriptive ecological study carried out using data collected by the Brazilian Oncology Panel of DATASUS. The numbers of diagnoses for malignant neoplasia of the prostate in Salvador between 2013 and 2022 were analyzed. Variables analyzed: municipality of residence; acts; age group; staging; therapeutic modality.*
Results: *In the period analyzed, 5,146 cases were reported in Salvador. With a peak in 2019, of 932 cases (18.11%), and a lower number in 2015 and 2016, both with 346 cases (6.72% each), as shown in Graph 1. About the patients: the most affected age group was between 65 and 69 years old, with 24.27%. In relation to the number of diagnosed cases, there was a 24-fold increase between 45 and 65 years old (Graph 2). In staging, the most prevalent grade was 3, with 22.28%. The most adopted therapeutic modality was chemotherapy (36.78%), followed by radiotherapy (20.40%).* ***Conclusion***: *Malignant prostate neoplasia is a public health challenge in Salvador due to prejudice and resistance towards screening tests. This leads to late diagnoses in advanced stages and compromises treatment. It is crucial to implement prevention and awareness strategies to improve men's health in the region, educating about the importance of exams and demystifying prejudices and facilitating early diagnosis.*

Keywords: *Neoplasms; Prostate; Early Diagnosis; Men's Health; Morbidity and mortality indicators.*

INTRODUCTION

Malignant neoplasia of the prostate is a topic of undeniable importance, representing a significant cause of morbidity and mortality in men worldwide. This cancer is complex and multifaceted, with several risk factors, including advanced age, family history, ethnic origin, diet and physical inactivity[3]. Although progress has been made in reducing the mortality rate in recent decades, prostate malignancy continues to challenge global public health.

In this context, it is essential to understand the risk factors, incidence trends and therapeutic modalities available to address this condition. Treatment encompasses a variety of options, including surgery, radiotherapy, chemotherapy and targeted therapies, all with the aim of providing better outcomes and quality of life for patients[4].

This article seeks to explore prostate malignancy in depth, examining its clinical and epidemiological characteristics in a specific period. Furthermore, it intends to address the local situation in Salvador, Bahia, between 2013 and 2022, highlighting challenges and strategies that can be implemented to improve prevention, early diagnosis and treatment of this disease that affects men's health.

METHODOLOGY

This study adopts a descriptive and cross-sectional approach to retrospectively analyze prostate malignancy, ICD-10: C-6, in Salvador, Bahia, from 2013 to 2022. Data were collected from the Hospital Information System (SIH /SUS) from DataSUS, allowing a comprehensive analysis of the trends and characteristics of this disease in the region. The variables analyzed include the municipality of residence, the age and age range of the patients, the stage of the disease and the therapeutic modalities adopted. This methodology will allow for a detailed investigation of the geographic distribution of cases in the region, the identification of the most affected age groups and possible variations over the period studied, the assessment of the severity of the disease in patients and the analysis of the treatment options used. The collected data were tabulated and analyzed using the Microsoft Excel tool.

RESULTS

During the period under analysis, a total of 5,146 cases of malignant prostate neoplasia were recorded in the city of Salvador. A significant increase in registrations was observed, reaching a peak of 932 cases in 2019, representing 18.11% of the total, while the years 2015 and 2016 presented the lowest numbers,

with 346 cases each, totaling 6.72% (as represented in **Figure 1**).

With regard to the patient profile, the age group of 65 to 69 years was the most described with 1,248 cases, corresponding to 24.27%. A significant increase in the number of diagnoses was notable, reaching 24 times higher among the age groups of 45 to 65 years, going from 10 to 243 cases. (as illustrated in **Figure 2**).

Regarding the staging of the disease, grade 3 proved to be the most prevalent, totaling 1,146 diagnosed cases (22.28%), followed by grade 2, with 583 cases (8.82%).

Regarding the therapeutic modalities adopted, chemotherapy was the most common, covering 1,892 patients (36.78%), followed by radiotherapy, which reached 20.40% incidence, with 1,049 cases. These results reveal a comprehensive view of the panorama of malignant prostate neoplasia in Salvador, highlighting diagnostic trends, most affected age groups, staging and the predominant therapeutic modalities throughout the studied period.

Graph 1; Cases Diagnosed in Salvador by year
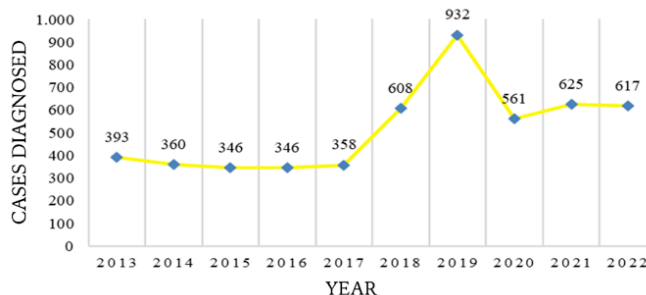
Figure 1: Distribution of diagnosed cases of malignant prostate neoplasia, by year from 2013 to 2022 in Salvador – Bahia.

Graph 2; Age at Diagnosis
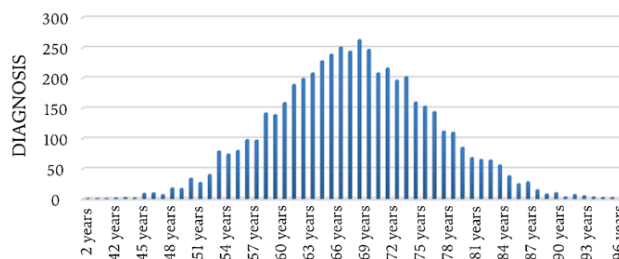
Figure 2: Distribution of diagnosed cases of malignant prostate neoplasia, considering age, in Salvador – Bahia, in the period 2013-2022.

DISCUSSION

In Brazil, prostate cancer represents an extremely relevant issue in public health. According to data from the National Cancer Institute (INCA), this neoplasm is the second most common among the male population, behind only non-melanoma skin cancer. It is important to highlight that prostate cancer holds a prominent position as the most diagnosed type of cancer in all regions of Brazil. The Brazilian Society of Urology (SBU)[1] highlights that one in six men over the age of 45 may be facing the disease without even being aware of it. This increase in incidence can be partially justified by the evolution of diagnostic methods, improvements in the country's health information systems and the increase in life expectancy of the Brazilian population[2]. With regard to the city of Salvador, capital of Bahia, over a period of 10 years, a total of 5,146 cases of prostate cancer were recorded. It is notable that there was a significant increase in incidence over this period, ranging from 346 cases in 2015 to a peak of 932 cases in 2019.

Prostate cancer, especially in its early stages, often progresses silently, without patients showing obvious symptoms, which can be similar to benign prostate problems, such as urinary difficulties and increased urinary frequency. As the disease progresses, symptoms such as bone pain, urinary problems and kidney failure may appear, especially in cases of generalized infections[3]. The speed of tumor growth can vary, from slow growth to accelerated growth[4]. This highlights the importance of screening in order to identify the disease in its early stages and thus improve the chances of successful treatment.

Prostate cancer screening is carried out through digital rectal examination and measurement of the level of Prostate Specific Antigen (PSA) in the blood. Screening is recommended from the age of 45 for men with risk factors and from the age of 50 for those without these factors[2]. The World Health Organization (WHO) highlights that early detection involves early diagnosis, when there are initial signs of the disease, as well as screening, which is the detection of the disease in asymptomatic patients. The Ministry of Health, through the National Policy for Comprehensive Men's Health Care (PNAIHS), seeks to improve the health of the male population in Brazil, reducing morbidity and mortality related to diseases such as prostate cancer and facilitating access to care comprehensive healthcare[5].

However, men's low demand for health services represents a challenge. Cultural aspects, such as fear, machismo and loss of virility, often lead men to postpone or avoid prevention and early diagnosis[6]. This results in the detection of the disease in more advanced stages, as evidenced by the predominance of grade 3 in the study, totaling 1,146 cases, followed by grade 2, with 583 cases. Therefore, the importance of promoting awareness and breaking down cultural barriers that prevent the search for medical care is emphasized. Furthermore, there are risk factors that increase the likelihood of an individual developing prostate cancer, including age (over 65 years), African descent and genetic predisposition[3]. Other factors include chronic inflammation, exposure to ultraviolet radiation, smoking, alcohol consumption, history of vasectomy and a diet rich in animal fat, red meat, calcium and milk[3].

Treatment for prostate cancer depends on the stage of the disease and includes surgery, chemotherapy, radiotherapy and, in some cases, bone marrow transplant[4]. In the context of Salvador, chemotherapy was the most common therapeutic modality, covering 1,892 patients (36.78%), followed by radiotherapy, which reached an incidence of 20.40%, with 1,049 cases. It is worth mentioning that the quality of life of patients after treatment is an important concern, since side effects, such as erectile dysfunction and urinary incontinence, can significantly impact the lives of prostate cancer survivors[3]. Therefore, strategies for preserving function and rehabilitation after treatment are becoming more prominent.

In summary, this study presents worrying results about the increasing incidence of prostate cancer in the city of Salvador. This highlights the pressing need to revisit local health policies and strengthen the prostate cancer prevention and treatment network, with a focus on early detection and timely treatment options. Raising awareness and promoting men's health is vital to addressing this public health challenge.

CONCLUSION

Given the results obtained in this analysis, the growing concern related to prostate cancer in the city of Salvador becomes evident, reflecting a significant increase in the number of cases throughout the studied period. This highlights the urgent need to direct efforts towards awareness and screening in at-risk groups. Furthermore, the predominance of grade 3 in disease staging highlights the importance of adequate staging, which directly influences therapeutic decisions and disease progression.

In summary, this study provides a complete view of the prostate cancer scenario in Salvador, covering diagnostic trends, most affected age groups, disease staging and the predominant therapeutic modalities throughout the analyzed period. The results highlight the need to revisit and strengthen local health

policies, with a focus on prevention, early detection and timely treatment of prostate cancer. Raising awareness and promoting men's health plays a crucial role in this public health challenge, with the aim of reducing the impact of this disease on the population.

DECLARATIONS

There were no sources of funding and conflicts of interest for this research.

DESCRIPTORS

Neoplasms; Prostate; Early Diagnosis; Men's Health; Morbidity and Mortality Indicators

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ARTIGO ORIGINAL I *ORIGINAL ARTICLE*

Analysis of the distribution of types of cervical intraepithelial neoplasia present in biopsies performed in piauí from january 2019 to march 2023

Análise da distribuição dos tipos de neoplasias intraepiteliais cervicais presentes em biópsias realizadas no piauí de janeiro de 2019 a março de 2023

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ABSTRACT

Introduction: The uterine cervical cancer is the third most frequent primary tumor in Brazilians women. In general, preceded by pre-malignant dysplasia (Cervical intraepithelial neoplasm – NIC), which increases the degree of dysplasia. His main risk factor is the infection by the human papillomavirus (HPV). *Objective*: Evaluate the frequency of NIC in histopathologic done in Piauí during January 2019 to March 2023. *Method*: Transversal, retrospective, and quantitative study. The data was collected at the Information of Cancer System – SISCAN (uterus lap and breast). It was dismissed by the Ethical Committee by using public data, that were evaluated statistically at the Google Sheets software. *Results*: NIC I was present in histopathologic in the last 5 years 116 times, being 45 (38,7%) in 2019, the age group most committed was 35 to 39 years old (21%). NIC II was found 74 times in histopathologic in Piauí, being 23 (31%) in 2022, with the age group most committed of 35 to 39 years old (16%). The NIC III was seen 58 times in histopathologic in the last 5 years, being 21 (36,2%) in 2019 and with most committed age of 35 to 39 years old (17%). *Conclusion*: Evaluated epidemiologically the major incidence of NIC between 35 to 39 years old. Concerning histopathologic, the NIC I and III had their apex in 2019 and NIC II in 2022. Public politics of tracking and prevention for cervical intraepithelial neoplasms are needed, mainly for the ages of 35 to 39 years old, being the age group of reproductive and work.

Keywords: uterine cervical neoplasm; secondary prevention; public health

RESUMO

Introdução: O câncer de colo uterino é o 3º tumor primário mais frequente em mulheres brasileiras. Geralmente precedido por lesão pré-maligna (neoplasia intraepitelial cervical – NIC), que aumenta de grau proporcionalmente ao grau de displasia. Seu principal fator de risco é infecção pelo papilomavírus humano (HPV). **Objetivo**: Analisar a frequência de NIC nas histologias realizadas no Piauí entre janeiro de 2019 e março de 2023. **Método**: Estudo transversal, retrospectivo e quantitativo. Dados coletados do Sistema de Informação do Câncer - SISCAN (colo do útero e mama). Dispensada a apreciação pelo Comitê de Ética em Pesquisa por serem utilizados dados públicos, sendo analisados estatisticamente no programa Planilhas Google. **Resultados**: NIC I esteve presente em histopatológicos nos últimos 5 anos 116 vezes, sendo 45 (38,7%) em 2019, a faixa etária mais acometida foi de 35 a 39 (21%). NIC II foi encontrado 74 vezes em histopatológicos no Piauí, sendo 23 (31%) em 2022, com faixa etária mais acometida de 35 a 39 anos (16%). O NIC III foi visto 58 vezes em histopatológicos nos últimos 5 anos, sendo 21 (36,2%) em 2019 e com idade mais acometida de 35 a 39 anos (17%). **Conclusão**: Analisou-se epidemiologicamente uma maior incidência de NIC entre 35 a 39 anos. Em relação ao histopatológico, os tipos NIC I e NIC III tiveram seus picos em 2019 e NIC II em 2022. Políticas públicas de rastreio e prevenção para neoplasias intraepiteliais cervicais são necessárias, principalmente para as idades entre 35 e 39 anos, sendo faixa-etária reprodutiva e laboral.

Palavras-chave: neoplasias intraepiteliais cervicais; prevenção secundária; saúde pública

INTRODUCTION

Cervical cancer, also known as cervical carcinoma, remains a significant global health challenge, impacting millions of women worldwide. This type of cancer accounts for a substantial portion of the morbidity and mortality burden, especially in regions with limited access to healthcare services and effective prevention and screening programs[5].

In Brazil, cervical cancer ranks as the third most frequent primary tumor in women. Cervical cancer originates from the cells of the cervix, the lower part of the uterus that connects to the vagina. The primary risk factor for the development of this disease is persistent infection by the human papillomavirus (HPV), which is highly transmissible. Although HPV is common and, in many cases, the body's immune system can naturally clear it, certain HPV strains can persist and lead to precancerous cellular changes, ultimately progressing to cervical cancer[3].

Typically preceded by a premalignant lesion known as cervical intraepithelial neoplasia (CIN), which increases in grade proportionally to the level of dysplasia. Its primary risk factor is infection with the human papillomavirus (HPV), with additional genetic and environmental factors at play. Thus, early detection and understanding of the characteristics of these precursor lesions play a crucial role in the prevention and effective treatment of cervical cancer, which is a significant public health issue worldwide[6].

Cervical cancer is the fourth leading cause of cancer in women globally, and it is estimated to have accounted for over 300,000 deaths in 2020. Persistent infection with the human papillomavirus (HPV) is the primary risk factor for cervical cancer development, and early identification of CINs, which are premalignant cellular changes, is crucial for effective prevention. Through the performance of biopsies and histopathological analysis, it is possible to classify these lesions according to their severity, guiding clinical management[8].

Understanding the prevalence of different types of CINs, their age distribution, and their histopathological characteristics can provide valuable insights to guide specific prevention, screening, and treatment strategies. In this context, this article sought to analyze the frequency of CIN in histological examinations conducted in Piauí between January 2019 and March 2023.

METHODS

This study is a retrospective, cross-sectional research with a quantitative approach, whose primary objective is the analysis of cervical intraepithelial neoplasia categories identified in biopsies. Data collection involved records from the Cancer Information System (SISCAN), specifically related to cervical and breast cancers, available in the Department of Informatics of the Unified Health System (DATASUS).

The study exclusively focused on the state of Piauí, considering the period from January 2019 to March 2023. It is relevant to emphasize that the public and non-identifiable nature of the information used in this study exempted it from the need for approval by the Research Ethics Committee. This is due to the absence of any established connection with the patients, preserving the full confidentiality of their data. Data tabulation and analysis from SISCAN were conducted using Google Sheets software. This software provided the necessary tools for data organization and evaluation, allowing for a detailed and efficient approach to the investigation of cervical intraepithelial neoplasias in the state of Piauí over the specified period.

Analysis of the distribution of types of cervical intraepithelial neoplasia present in biopsies performed in piauí from january 2019 to march 2023

Análise da distribuição dos tipos de neoplasias intraepiteliais cervicais presentes em biópsias realizadas no piauí de janeiro de 2019 a março de 2023

RESULTS

The cases of CIN in Piauí were analyzed, revealing a total of 116 cases of CIN I, with a higher incidence in the year 2019, with 45 cases (38.79%).
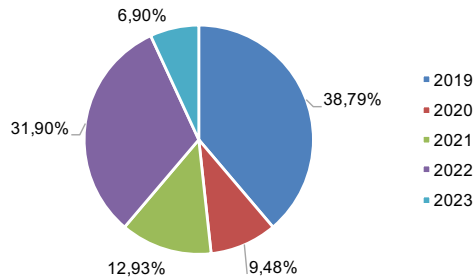
Figure 1. Number of CIN I cases per year, Piauí, between the years 2019 and 2023
SOURCE: Datasus, Teresina-PI, 2023

Among these cases, it was more common in the age group of 35 to 39 years with 21 records (18.10%) and less common among those aged 65 to 69 years, with only 1 case (0.86%).
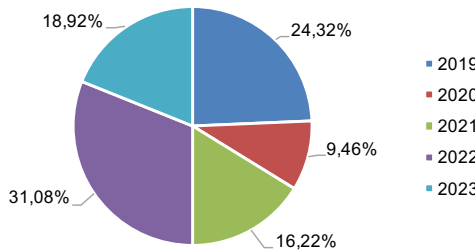
Figure 2. Age range of CIN I cases in Piauí, between the years 2019 and 2023
SOURCE: Datasus, Teresina-PI, 2023

CIN II was documented 74 times in histological results in Piauí, with 23 cases (31%) in 2022.
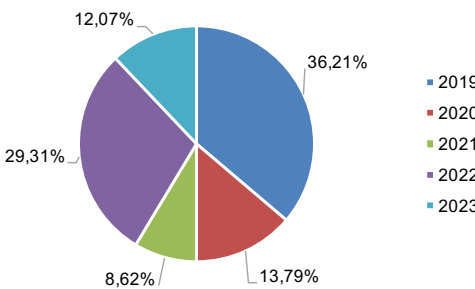
Figure 3. Number of CIN II cases per year, Piauí, between the years 2019 and 2023
SOURCE: Datasus, Teresina-PI, 2023

When classified by age, a higher incidence was observed in individuals aged 35 to 39 years with 16 cases (21.62%), and a lower incidence in the age group of 70 to 74 years with only 1 case (1.35%).
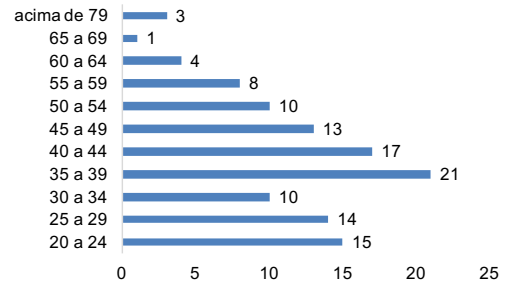
Figure 4. Age range of CIN II cases in Piauí, between the years 2019 and 2023
SOURCE: Datasus, Teresina-PI, 2023

CIN III was observed 58 times in histological results over the last 5 years, showing a higher frequency in 2019 with 21 cases (36.21%).
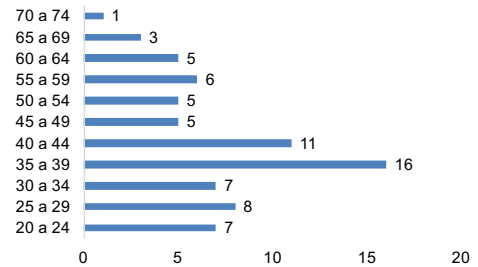
Figure 5. Number of CIN III cases per year, Piauí, between the years 2019 and 2023
SOURCE: Datasus, Teresina-PI, 2023

The most commonly affected age group for CIN III was between 35 and 39 years with 17 cases (29.31%). The least affected were in the age groups of 20 to 24, 55 to 59, 65 to 69, and 75 to 79 years, with only 1 case in each age interval, corresponding to 1.72%.

Figure 6. Age range of CIN III cases in Piauí, between the years 2019 and 2023
SOURCE: Datasus, Teresina-PI, 2023

DISCUSSION

The results of this study provide a comprehensive overview of the distribution of different grades of cervical intraepithelial neoplasia (CIN) over a five-year period, with a focus on the region of Piauí, Brazil. Analyzing these findings is essential to understand the epidemiology of CIN, identify temporal and age-related trends, and assist in the development of targeted prevention and treatment strategies[4].

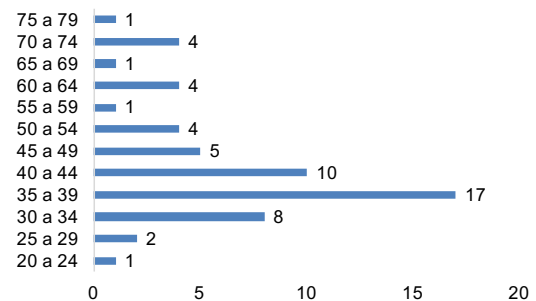This cancer is notable for its preventable and treatable nature. With proper medical monitoring, regular screening exams, and HPV vaccination, most cases of cervical cancer could be prevented. However, the lack of access to healthcare services, women's health education, and awareness of the importance of screening contribute to the persistence of this issue[7].

Regarding Grade I CIN (CIN I), the results reveal a total of 116 cases identified in the past five years, with a trend of variation over this period. Notably, the year 2019 recorded the highest prevalence of CIN I, representing 38.7% of cases. This observation may indicate annual fluctuations in the detection and diagnosis of these precursor lesions. Additionally, the most affected age group was 35 to 39 years, with 21% of cases. The concentration of cases in this age group underscores the importance of targeted screening and awareness strategies for women in this age group to identify and treat CIN I early[2].

In the case of Grade II CIN (CIN II), 74 cases were identified in histological results, with an annual variation showing a higher incidence in 2022, representing 31% of cases. The most affected age group again was 35 to 39 years, with 16% of cases. These results suggest a growing trend in the detection of CIN II, which may be the result of improvements in screening programs or changes in the characteristics of the at-risk population. Identifying a specific age group as the most affected reinforces the importance of preventive strategies directed at this population[1].

For Grade III CIN (CIN III), the results indicate a total of 58 cases in the past five years, with a significant concentration of cases in 2019, representing 36.2% of the total. Once again, the age group of 35 to 39 years stood out as the most affected, with 17% of cases. The observation that most cases of CIN III occurred in 2019 may suggest temporal variations in the detection of these lesions, although it is important to consider that CIN III is a more advanced lesion compared to CIN I and II and may be more easily identified. Additionally, the concentration of these cases in women aged 35 to 39 reinforces the need for prevention and awareness efforts directed at this age group[7].

While cervical cancer poses a global threat to women's health, it is important to recognize that its incidence and mortality rates vary considerably from one region to another[9]. Furthermore, advances in scientific research and medicine have led to a better understanding of cervical cancer's pathogenesis, as well as new prevention and treatment strategies.

CONCLUSION

The epidemiological analysis revealed the highest incidence of CIN in women between the ages of 35 and 39. In terms of histological types, CIN I and CIN III peaked in 2019, and CIN II in 2022. Therefore, it is believed that public screening and prevention policies for cervical intraepithelial neoplasias are necessary, especially for the age group of 35 to 39, which includes women in their reproductive and working age.

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RELATO DE CASO I *CASE REPORT*

Small Cell Neuroendocrine Carcinoma in the Maxillary Sinus Region: Case Report

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ABSTRACT

Introduction: Small cell neuroendocrine carcinoma (SCNC) is an undifferentiated neoplasm that generally affects the lungs. Although rare, the presence of extrapulmonary sites - such as the head and neck region - has been described in the literature. In these sites, this neoplasm is marked by aggressive biological behavior and histopathological similarity to those of the pulmonary locus. **Objective**: This study aims to present the case of a patient with SCNC in the maxillary sinus, an uncommon site. **Case report**: A 51-year-old female patient, P.R.S., was admitted to a specialized Head and Neck Surgery service in the interior of Bahia, complaining of right-sided nasal obstruction, hyaline rhinorrhea and transient hyposmia for 6 months. Physical examination revealed a non-obstructive high septal deviation on the left and hypocolored mucosa. Rhinoscopy showed hypertrophied inferior turbinates and an irregular, hyperemic and hypervascularized tumor in the sphenopalatine recess. Videonasofibroscopy confirmed the rhinoscopy findings. Magnetic resonance imaging showed an expansive formation compatible with a neoplastic lesion with an epicenter in the posterior part of the right nasal fossa and extension into the nasopharynx. Incisional biopsy of the lesion indicated a round and blue cell tumor and immunohistochemistry compatible with small cell neuroendocrine carcinoma. One month after the biopsy, the patient developed mild paresthesia in the right hemiface and epiphora. However, the patient was lost to follow-up. **Conclusion**: SCNC is an uncommon pathology in the maxillary sinus, so it is pertinent to report the occurrences to aid future research and improve therapeutic choices, involving a multi-professional approach.

Keywords: Small Cell Carcinoma; Maxillary Sinus Neoplasm; Head and Neck Cancer; Rare Disease; Case Report.

INTRODUCTION

Small cell neuroendocrine carcinoma (SCNC) is an undifferentiated neoplasm that occurs primarily in the lungs. However, although extremely rare, it can also manifest in a variety of extrapulmonary sites, some of the most common being: prostate, urinary bladder, stomach, esophagus, salivary glands, larynx, gallbladder, skin and cervix. It is believed that these tumors develop from totipotent stem cells, which are present in all tissues. Furthermore, it can manifest as a metastatic disease from an unidentified primary site, with the head and neck region being the 4th most common site of extrapulmonary origin (16%)[1].

Extrapulmonary SCNC is histopathologically similar to those of the pulmonary site, and also has an aggressive biological behavior, marked by local recurrences and the early occurrence of distant metastases (especially to regional lymph nodes, bones and liver), with a 5-year survival rate of around 15%.[1] In general, the initial symptoms are due to locoregional disease, but are indistinguishable from other tumors at the same site; symptoms can also be manifested by paraneoplastic syndromes and signs of distant metastasis. The approach varies according to the site of localization, presence of metastases and extent, however, treatment is generally performed surgically and/or through chemotherapy (usually containing etopside and platinum compounds) and radiotherapy, and aggressive locoregional therapy can be used in cases of localized disease, however, recurrences are common and adjuvant chemotherapy is recommended[1,2].

CASE REPORT

A 51-year-old female patient, P.R.S., was admitted to a specialized Head and Neck Surgery service in the interior of the state of Bahia, complaining of right-sided nasal obstruction, hyaline rhinorrhea and transient hyposmia for 6 months, and denying any comorbidities or allergies. On physical examination, she presented with non-obstructive high septal deviation in the left nasal fossa, hyaline secretion in the right nasal fossa, and hypocolored mucosa in both nasal fossae. Rhinoscopy showed hypertrophied inferior turbinates, retractable when using a vasoconstrictor, and an irregular, hyperemic and hypervascularized tumor in the sphenopalatine recess. Videonasofibroscopy showed pale nasal mucosa, an irregular-looking, hyperemic and hypervascularized tumor in the sphenopalatine recess, which prevented the progression of the optical fiber.
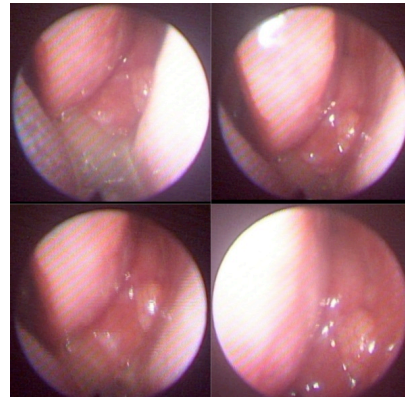
Figure 1. Patient's flexible nasofibroscopy images, showing the tumor.

Computed tomography (CT) of the face suggested maxillo-spheno-ethmoidal sinusopathy, evidenced by the presence of soft tissue density content in the right nasal fossa, in continuity with the sphenoid sinus, with obliteration of the spheno-ethmoidal recess on the right and extension into the nasopharynx.
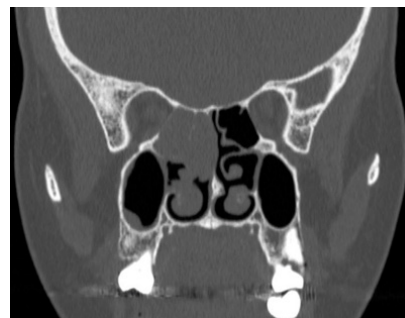
Figure 2. Non-contrast CT of the face, showing bone window, in coronal reconstruction.

Figure 3. Non-contrast CT of the face, showing soft tissue window, axial plane.

Magnetic resonance imaging (MRI) of the face showed an expansive formation compatible with a neoplastic lesion, with hyposignal on T1, hypersignal on T2, with heterogeneous enhancements, with an epicenter in the posterior part of the right nasal fossa and extension to the nasopharynx, sphenoid sinus and ethmoid cells.

Figure 4. MRI of the face, axial section.

Figure 5. MRI of the face, coronal section short time inversion recovery (STIR).

Figure 6. MRI of the face, sagittal T1 section after contrast.

Incisional biopsy of the lesion indicated a round blue cell tumor and immunohistochemistry compatible with small cell neuroendocrine carcinoma.

One month and 10 days after the biopsy, the patient developed mild paresthesia in the right hemiface and epiphora, complaining of exacerbated fear and denying active bleeding.
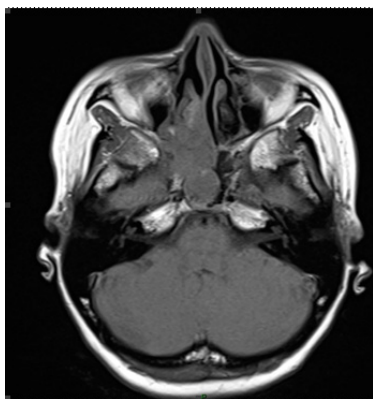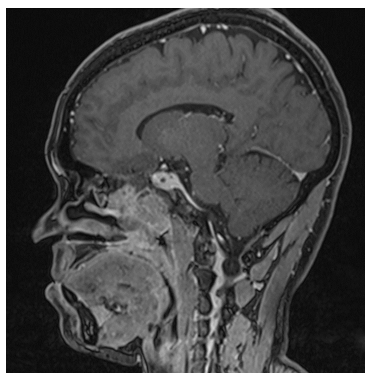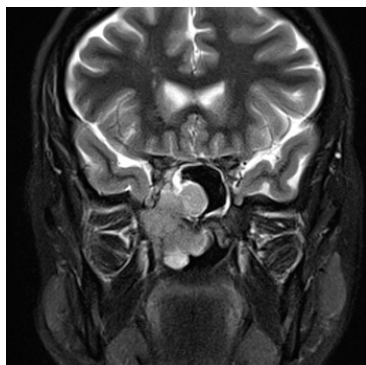
The multidisciplinary team responsible for the patient's care wanted to hold a meeting in order to jointly define the best therapeutic strategies for the patient's treatment, however, after the last appointment that took place after the biopsy, the patient lost follow-up and no longer returned to the service specializing in head and neck surgery.

DISCUSSION

Extrapulmonary small cell carcinoma is a rare cancer, corresponding to around 4% of small cell carcinomas[3], it has a reduced association with smoking when compared to pulmonary occurrence, however, it still has a prevalence of 63% in patients with the disease[4]. The manifestations of this carcinoma are often non-specific and can be confused with common inflammatory diseases, which sometimes leads to a late diagnosis[2].

In order to properly recognize the locoregional extent of the disease, it is essential to take into account the proximity of the maxillary sinus to structures such as cranial nerves, tooth roots, blood vessels, nasal cavities and the orbit5. Complementary exams such as nasofibroscopy and paranasal sinus tomography are useful tools to help determine the extent of the tumor.

Bone marrow biopsy is one of the indications in cases of clinical and laboratory suspicion of infiltration of the central nervous system, but this was not what was suggested in this case. Furthermore, a positron emission tomography (PET) scan would be an effective tool for screening for distant metastasis, but it was not possible due to the costs and loss of the patient's follow-up.

The patient reported is a 51-year-old female, corroborating the literature[6-8], which shows that the average age of diagnosis is 50 years and the age of diagnosis is variable (20-70 years), and there is apparently no gender predominance.

Regarding the clinical aspect of the case, nasal obstruction was the patient's main complaint, which corroborates data from other authors[3,6], while for other researchers,8 the main symptom was epistaxis. It is also worth noting that other reports have also had the maxillary sinus as one of the main sites of involvement[3,6-8].

CONCLUSION

SCNC in the maxillary sinus region is a rare neoplasm with aggressive behavior and low survival rates, although it shares histological similarities with SCNC in the lung. The report on this topic is valid insofar as it can encourage other health professionals to recognize the pathology, adding value to this topic in scientific and clinical practice.

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SOCIEDADE BRASILEIRA
DE PSICO-ONCOLOGIA

Religion as a coping mechanism in psycho-oncology?
A case report

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ABSTRACT

Introduction and objectives: *The relationship between religion and mental health has been increasingly studied, including in psycho-oncology. In fact, many cancer patients turn to religion to address the negative impact of this diagnosis. With this case report, we want to discuss the impact of religion on mental health and understand the doubts that religious beliefs can cause in the diagnosis.* ***Methods****: A clinical interview and elaboration of the respective clinical case are carried out, with subsequent execution of a review of the bibliography.* ***Results****: She is a 56-year-old patient with recurrent cervical cancer undergoing palliative chemotherapy. She was referred to the Psychiatry and Psychology Department because she presented depressive symptoms. The patient expressed religion as a protective factor, having restructured her daily routines, with increased faith, believing that Jesus could cure her, dedicating much of her time to prayer and consulting social network pages on Christianity. She was treated with an antidepressant, and a slight mood elevation was observed.* ***Conclusions****: In the present case, the way in which the patient started to live religion, occupying most of her time in it, leads to several questions. On the one hand, the protective role of religion in facilitating the adaptation to the diagnosis and the management of the underlying symptomatology and, on the other hand, the possible positive negation of the prognosis. Furthermore, the question arises whether delusional conviction may emerge from this religious belief. In fact, the connection between religious practices and mental health has been controversial, with positive and negative factors being pointed out regarding religion as a coping mechanism.*

Keywords: *Psycho-oncology; Religion; Mental health*

RATIONALE AND OBJECTIVES

The presentation of a clinical case allows us to discuss various topics. As far as psycho-oncology is concerned, there are still many doubts about the role of religion as a coping mechanism.

The aim of this paper is to present a clinical case and to understand the impact that religion can have on mental health. In particular, we want to analyze the diagnostic doubts that can arise in relation to religious beliefs.

INTRODUCTION

In recent years, the incidence of cancer has been increasing. In addition, many patients survive with sequelae or live with this disease for many years. As a result, cancer has been shown to have a strong psychosocial impact[1]. Effectively, studies show that 40% of cancer patients have a psychiatric illness[2].

Psycho-oncology has been developing since the 1970s and is now an extremely important part of cancer care[3]. In fact, this is a subspecialty that acts in psychological, social, behavioral, and ethical terms, allowing for an extended intervention[4].

Regarding the impact that cancer has on mental health, the most frequently diagnosed psychiatric illnesses in this disease are depression, anxiety disorders and disorders related to trauma and stress[5]. To address these issues, patients use multiple coping strategies, one of which is religion[6,7]. The impact and role of religion in mental health has been increasingly studied. If we go back in time, psychiatry tended to ignore religion or consider it pathological. Religion also invoked psychiatry as something "dangerous"[8]. Today, this relationship has changed, and the literature shows that religious beliefs can have a negative effect but also a positive effect when used as a coping strategy[8,9].

METHODS

To prepare the clinical case, a complete clinical history was taken, and the patient's file was consulted with her authorization. After analyzing the case, a few questions were raised, with a consequent bibliographical search on the subject, to carry out a review of the literature.

RESULTS

This was a 56-year-old female patient who was married and had two daughters. She worked in a dye factory and had been on sick leave for several months.

The patient's psychiatric history was that she had been diagnosed with a major depressive episode several years ago, although she could not specify how many. At the time, she began psychiatric and psychological follow-up, but this was carried out erratically, and the patient did not comply with the prescribed medication and left her appointments early. She denied any other psychiatric history.

Regarding her cancer history, in 2018, she was diagnosed with cervical cancer and underwent chemotherapy, with resolution of the clinical situation. She continued to be followed up in gynecology consultations. In June 2021, she was diagnosed with a recurrence of the same cancer with distant lymph node metastases. She began treatment with palliative chemotherapy.

The patient was referred to a psychiatry and psychology consultation as part of the psycho-oncology subspecialty due to depressive symptoms and altered sleep patterns.

In May 2022, she had her first psychology appointment. At this assessment, the patient said that since the new diagnosis, she had restructured her life plan according to her faith. She explained that she spent more time praying and had become involved in various church activities. Given this description, religion was identified as a positive coping strategy for dealing with the patient's diagnosis.

That same month, she was assessed in a psychiatric consultation, where she denied feeling sad, justifying it with her faith ("It is faith that gives me happiness", "Jesus is the final doctor" (sic)). She also added that she had restructured her routines according to her beliefs. A mental state examination revealed a subdepressed mood, with no other alterations. She was medicated with sertraline 50 mg/day.

At the psychiatry re-evaluation, in August 2022, the patient denied any symptomatology, specifying that she felt less anxious. The patient also reported feeling happier and mentioned that she was focused on religious themes, where she spent most of her time (she followed and participated in various social media groups about Christianity, watched various homilies on YouTube and spent most of her time listening to church music). She said that her husband had already commented that the patient prayed a lot more than usual. Objectively, she had an elevated mood associated with pressure in her speech, which was centered on religious themes. The psychiatrist advised the patient to stop taking the antidepressant.

To reassess the mood swings, a new consult was made in September of 2022. The patient had no spontaneous complaints. She said that she would continue to undergo chemotherapy and that she viewed

cancer as a chronic disease. When asked about her faith, she emphasized the restructuring of her routines (she woke up at 4.30am to pray, saying "I do not need an alarm clock, my guardian angel wakes me up" (sic), and spent most of her time praying). She added that "my husband says I'm too focused on this" (sic). She was taking 25 mg of sertraline per day. On examination of her mental state, her mood was neutral, but her speech was still slurred when she spoke about issues related to Christianity. She was again advised to stop taking the drug, with a new appointment scheduled in the short term.

DISCUSSION

When we analyze this clinical case, two main questions arise. On the one hand, the patient's mood swings should be questioned. On the other hand, religion played a role in this patient as she dealt with her cancer illness.

In the first question, the patient showed this change in mood after the introduction of the antidepressant, and it subsided when the dose of sertraline was reduced. Therefore, it is very likely that the mood change is iatrogenic. Studies show that antidepressants can induce hypomanic or manic episodes in patients with a previous diagnosis of major depressive disorder[10].

Regarding the role of religion, there are several points to consider. The faith and belief that this patient lives can play a protective role, allowing her to cope better with her illness and her prognosis. However, the way in which her routines have been reorganized according to her religion, some of her expressions and beliefs and the pressure of her speech when she talks about this subject raises the question of whether we are dealing with a delusional idea. Finally, we must consider whether the patient is not structuring a denial of her condition.

As discussed above, the literature points to both positive and negative aspects of religion as coping mechanisms.

Religion has been identified as a factor that improves quality of life in people with mental illness[11]. Religious beliefs also seem to have this effect in cancer patients. They reduce stress, reinforce positive thoughts and give greater hope regarding treatment[12].

In relation to suicide, the fact that religion increases positive thoughts and punishes this autolytic act means that faith is seen as a protective factor[8].

Another factor that seems to make devotion a protective factor is because it is associated with the development of a community. In fact, there seem to be benefits to being part of a group, where the patients can get support and share experiences[13].

Regarding the negative aspects, it is often difficult to distinguish religious beliefs from a delusional idea. Additionally, there are still doubts about whether religion can influence the origin of illnesses with psychotic symptoms[14].

In contrast to what has already been discussed, studies show that believers can develop ideas that illness is a punishment for their sins and, consequently, increase levels of anxiety and depression and even be the cause of suicide[15]. In the same direction, it can make the personal to deny the diagnosis and/or prognosis[16].

Religion depends on the cultural and individual context. In this way, health professionals' own beliefs and views of religion can have an impact on their perception of the benefit or harm of this coping mechanism[8]. It is therefore important for professionals to know their limitations and try to better understand the impact of their beliefs.

There are still many doubts about this case, so it would be important to continue to follow the patient and see what the longer-term development is. It would also be important to get information from the family and see what impact all these changes might have on their daily lives.

Many of the studies presented here correlate religion with mental health, with few studies looking directly at cancer patients. Additionally, the methodology of many studies is not well defined. Therefore, it is important to carry out studies with an objective methodology that approaches psycho-oncology.

CONCLUSION

The relationship between religion, mental health and psycho-oncology is still surrounded by numerous questions, and it is not certain whether faith is a positive or negative coping mechanism.

We also know that the cancer patient must be understood as a whole, which means considering the patient's beliefs and including them in the diagnostic and therapeutic process.

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