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Review Article

Considerations and Analysis of the Implementation of Oncogeriatrics in Chile and Its Importance

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Abstract:

The Chilean census of 2017 reported that 11.4% of the local population are 65 years or older, and according to the National Institute of Statistics (INE) by 2025 20% of the Chilean population will be in this group.

Cancer in Chile is a major public health problem. Aging is a significant risk factor for cancer development which added to the improved life expectancy, it increases the incidence of cancer. In 2040, new cancer cases will increase from 19.3 to 30.2 million worldwide.

Older people are a heterogeneous group requiring specialized and individualized management. Chronological age does not necessarily correlate with physiological age. More than half of the geriatric patients with cancer have at least one comorbidity which is relevant when defining a cancer treatment. Likewise, polypharmacy is frequent and is an important issue to consider in people with cancer due to the risk associated with drug interactions.

Oncogeriatric assessment consists of a comprehensive multidimensional evaluation, including functional and biopsychosocial issues, addressing aspects of the neoplastic disease such as the risk of toxicities due to systemic therapy and life expectancy. This tool has proven to be helpful in the diagnosis of conditions that are not evident in a routine oncological evaluation, such as geriatric syndromes, frailty, functional dependence, and cognitive impairment among others, which have an impact when deciding on therapy, predicting risks of treatment toxicity and mortality.

Keywords: oncogeriatrics; geriatrics cancer and elderly; cancer in chile

Introduction:

The Chilean census of 2017 reported that 11.4% of the local population are 65 years or older, and according to the National Institute of Statistics (INE) by 2025 20% of the Chilean population will be in this group [1].

Cancer in Chile is a major public health problem. Aging is a significant risk factor for cancer development [2] which added to the improved life expectancy, it increases the incidence of cancer. In 2040, new cancer cases will increase from 19.3 to 30.2 million worldwide [3].

Older people are a heterogeneous group requiring specialized and individualized management. Chronological age does not necessarily correlate with physiological age. More than half of the geriatric patients with cancer have at least one comorbidity which is relevant when defining a cancer treatment [4]. Likewise, polypharmacy is frequent and is an important issue to consider in people with cancer due to the risk associated with drug interactions [5].

Oncogeriatric assessment consists of a comprehensive multidimensional evaluation, including functional and biopsychosocial issues, addressing aspects of the neoplastic disease such as the risk of toxicities due to systemic therapy and life expectancy [6]. This tool has proven to be helpful in the diagnosis of conditions that are not evident in a routine oncological evaluation [7], such as geriatric syndromes, frailty, functional dependence, and cognitive impairment among others, which have an impact when deciding on therapy, predicting risks of treatment toxicity and mortality [8].

According to official data, the elderly population in Chile accounts for 3,348,010 inhabitants, 1,861,067 females, and 1,468,943 males [9], 90% of them are part of the Chilean public system of health (FONASA) [10], and the rest are treated in the Chilean private system of health (ISAPRES).

Currently, cancer is the main cause of death in Chile. Unfortunately, local statistics were not initially designed thinking of the definition of the geriatric population, therefore the reported incidence of cancer for the group of 50-69 years is unique and does not allow to have confident numbers concerning the 60-69 years subgroup. Also, there is a lack of an integrated national register of tumors, a situation that underestimates the real dimension of the cancer patient among the geriatric population.

Among the 70 years and older Chilean population, the reported incidence rate and percentage for this group of age for the main type of tumors are as follows: prostate cancer (345,3/100,000 male, 22.9%), gastric cancer (247.7/ 100,000 inhabitants, 16.4%), and lung cancer (193.1/ 100,000 inhabitants, 12,8%) for the male population; and gastric cancer (96/100,000 inhabitants, 10,9%), lung cancer (94,2/100,000 inhabitants, 10.7%) and breast cancer (83.9/100,000 women, 9.5%) for the female population [11].

Currently, in Chile as in other developing countries, oncogeriatrics is gaining impact little by little. It is being promoted by trained specialists, giving guidelines and tools to geriatricians, medical oncologists, hematologists, radiotherapists, and palliative care physicians to achieve quality care and individualized therapy for geriatric patients with cancer.

Despite the pathophysiological differences between a normal cell during the aging process and a cancer cell, there is clear scientific evidence that the normal aging of cells is a known risk factor for developing cancer, meaning that at an older age there is a greater risk for developing cancer [12].

Due to efficient health policies in Chile, a significant reduction in the child mortality rate occurred in recent past decades, associated with better control and management of chronic diseases in adults. This equation resulted in a significant increase in the geriatric population achieving a current life expectancy at birth of 77.3 years for men and 82.1 years for women.

These results place Chile, along with Cuba and Uruguay within the countries of America that by 2025 will have approximately 20% of the elderly population. This not only means a great achievement in the health policies of these countries but at the same time, a great challenge for providing an adequate standard of life and health to this group, optimizing the management of chronic pathologies, including in this concept the multidisciplinary management of cancer in a more frailty population, often affected by limited socioeconomic resources and access to optimal health care [13].

In Chile, awareness has been raised about the importance of the comprehensive management of the elderly patient with cancer and the need to expand knowledge about this topic among general practitioners, family physicians, internists, and surgeons, but also in all the health team [14]. In this country, there is an increase in the cancer rate in part due to the aging of the population. Despite that many cancer registries in Latin America are in process of continuous improvement, there is no exact data on the real number of older people with cancer, often due to insufficient notification, lack of diagnostic verification, or simply limited access of patients to specialized health centers [15].

The Importance of Oncogeriatrics for the Cancer Teams

Cancer treatments include but are not limited to surgery, systemic treatments (cytotoxic chemotherapy, molecular therapies, biological therapies, hormone therapy, immunotherapy), and radiation therapy. Decision-making on how to properly treat a patient is based on multidisciplinary decisions supported by scientific information from clinical studies. Unfortunately, in clinical studies the elderly population tends to be underrepresented, assuming equivocally that the results of these trials always represent this patient´s population [16]. In the decision-making process on cancer treatments, toxicities and potential sequelae must be considered [17]. Due to new drugs and radiotherapy development, rational and precision surgery, and also an earlier diagnosis of cancer, the older people who will survive cancer in the coming decades will increase strongly, however, the effects of these treatments will have repercussions for the survivors with a potential affectation on their quality of life [18]. Therefore, it is necessary to consider that clinical studies should be adapted for the geriatric population, adjusting their inclusion and exclusion criteria and the objectives that are relevant for this group of age [19]. Many times, the decision-making of cancer treatments is mostly based on the medical oncologist's opinion assuming that are properly trained for treating older patients with cancer [20].

Regardless of the training of cancer specialists, treatment of the elderly is highly complex and requires a vision and assessment by a geriatrician with knowledge of cancer to obtain proper information about the functional and psychological capacities of the patient, helping for therapeutic decision-making by the cancer medical team. The geriatrician dedicated to evaluating and supporting cancer patients, known today as an oncogeriatrician, uses different tools and instruments to perform a comprehensive geriatric report, subdividing patients according to a greater or minor risk of toxicities to therapies and according to the objective expectations of survival with or without systemic treatment, allowing a rational take of decisions [21].

Characteristics of elderly cancer patients

Older people are a group with special characteristics, very different when compared to the younger population. Therefore, it is important to establish some concepts to clarify the differences between geriatrics and non-geriatric adult patients. Briefly, we will explain phycological changes, and geriatric syndromes which include but are not limited to frailty, polypharmacy, and its consequences, fall syndrome, and malnutrition in the elderly and their relationship with cancer treatments.

There are important physiological changes in the aging process. Knowing the heterogeneity of physiological changes in pharmacokinetics, pharmacodynamics, tolerance in different tissues, and how this influences carcinogenesis is essential for understanding the link between cancer and its treatment in older people. Vulnerabilities assessment, the presence or absence of frailty, and comorbidities are associated with life expectancy [22].

The objectives in the management of elderly patients with cancer should be individualized according to the context of each person as an individual with some common goals, such as relieving symptoms and complications cancer-related, preventing and reducing treatment-related toxicities, improving tolerance to therapy, improving communication between patients and health personnel, reducing the emotional burden between patients and caregivers, and optimizing the care of survivors.

Within geriatric syndromes, some of them are associated with worse results in some cancer treatments. Frailty is defined as a cyclical, complex, and multidimensional state of reduction of the physiological reserve, resulting in a lower capacity for resilience, adaptation, and increased vulnerability to stressors. In the general population, its prevalence varies between 10% to 20% among people older than 65 years [23] and reaches up to 50% in those older than 85 years [24].

The prevalence of frailty reported among cancer patients ranges from 6% to 86%, with a median of 42% [25]. Frailty is associated with a worse survival rate with an HR 2.67 (95% CI 1.11-6.83, p0.029) according to the Linda Fried Frailty phenotype, increasing to an HR 3.39 (95% CI 1.82-6.29, p <0.001) when it is diagnosed by a comprehensive geriatric assessment [26]. It is also associated with a higher incidence of colorectal postsurgical complications with an OR 4.083 (95% CI 1.4-11.6, p0.006) [27] and in gastric surgery with an increase in systemic complications, OR 6.06 (95% CI 1.78 -20.9, p0.004) [28].

Reported frailty among the Chilean elderly population, based on analysis from the Chilean National Health System, accounts for 10.9% (7.7% for males and 14.1% for females respectively). Depending on the associated morbidity reported frailty was 0% when no comorbidity exists, 6.2% when only one comorbidity is present, but it raises to 64% when 3 or more comorbidities are present. 32.6% of cancer patients are frailed according to this report [29].

One of the major problems in geriatrics is polypharmacy. There is no consensus for a clear definition for this term [30], then we could assume that the concomitant use of two or more drugs could be included within this definition. Some authors such as Turner consider polypharmacy when a patient uses five or more different drugs [31]. Polypharmacy has been associated with a greater probability of interrupting scheduled surgery [32], an increase in almost double the risk of post-surgical complications [33], a greater need for hospitalizations [34], and an increase of 6 times more grade 3 or greater chemotoxicities [35]. Polypharmacy is also responsible for producing greater functional deterioration, a higher incidence of delirium [36], and an almost 10-fold increase in the 30-day mortality days in selected populations [37].

Another important geriatric syndrome to be considered and prevented is the “fall syndrome”. The current presence or a previous history of cancer increases the risk of falls by 15% to 20% [38]. It is essential to ask about the antecedent of falls during the last 6 months, as well as the limitations in activities of daily living, cancer-related fatigue, to assess walking and balance disorders, to request vitamin D plasmatic levels, to review medications in current use, to correct visual disturbances and to carry out close interdisciplinary management with kinesiology and occupational therapy, encouraging and prescribing physical activities with exercises to improve strength and balance.

Malnutrition is a predictor of mortality and morbidity, being related to up to 20% of cancer-related deaths and affecting more than a third of cancer patients [39]. It is also related to a higher toxicity rate of cancer therapies [40], lower response rate, poor quality of life, deterioration of functional status, and prolongation of hospital stay. These results must be considered to develop research strategies and assessments by nutritionists to allow a safer cancer treatment or to inform the oncological team if the patient should not undergo treatment. The presence of mood disorders, pain, taste disturbances, and nausea or vomiting should be also assessed. It is essential to determine access to food and activate the social network, implement, and access nutritional supplements, break down diet myths, and emphasize the importance of protein intake in the diet of the elderly globally.

Oncogeriatric evaluation models:

International recommendations suggest an oncogeriatric assessment for all cancer patients over 65 years old [41] [42] [43], however, globally there is a lack of geriatricians to achieve this need.

In Spain, after the First National Board of Multidisciplinary Oncogeriatrics Work in 2011, and considering international recommendations as a reference, three ways of evaluating older people with cancer were recommended, depending on the availability and resources of each center [44].

Firstly, the integrated model is considered the gold standard, where a multidisciplinary assessment is carried out involving geriatricians, medical oncologists, radiation oncologists, palliative caregivers, nutritionists, and social workers among other professionals, obtaining a comprehensive diagnosis for making treatment decisions in agreement with the patient. The second form of assessment is the collaborative model which consists of the geriatrician's support to a cancer specialist in the diagnosis and decision-making process, through consultation. The geriatrician performs the oncogeriatric assessment and provides recommendations. In those health centers that do not have geriatricians, the screening model is carried out, focused on the diagnosis of frailty by the oncologist, through an abbreviated comprehensive geriatric evaluation, to recommend the best type of treatment for the patient considering the chances to achieve better results with minor risk of toxicities.

Given the time that is needed for an oncogeriatric evaluation, shortened screening tools have been developed to detect which patients may require an extended geriatric evaluation such as the Geriatric 8 (G8), which consists of 8 questions involving some geriatric domains which have shown to be more sensitive in detecting vulnerable older people [45] (Figure 1).

Geriatric 8 (G8)	
1.- Have you lost your appetite? Have you eaten less due to poor appetite, digestive problems, chewing or swallowing difficulties in the last 3 months	0 = have eaten much less
	1 = have eaten less
	2 = have eaten the same amount
2.- Recent weight loss (<3 months)	0 = weight loss> 3 kg
	1 = do not know
	2 = weight loss between 1 and 3 kg
	3 = there has been no weight loss
3.- Mobility	0 = from the bed to the couch
	1 = autonomy inside the house
	2 = leaves home
4.- Neuropsychological problems	0 = dementia or severe depression
	1 = moderate dementia
	2 = no psychological problems
5.- Body mass index (BMI) = weight in kg / (height in m) 2	0 = BMI <19
	1 = 19 ≤ BMI < 21
	2 = 21 ≤ BMI < 23
	3 = BMI ≥ 23
6.- Do you take more than 3 medications a day?	0 = yes
	1 = No
7.- Compared to people your age, how do you say that your health is?	0.0 = not so good
	0.5 = I don't know
	1.0 = just as well
	2.0 = better
8.- Age	0 = > 85 years old
	1= 80- 85 years old
	2 = < 80 years old

Total	< 14 Frailty Risk

A recent official Chilean report demonstrated that the first cause of death in this country is cancer and no longer cardiovascular and circulatory diseases [46], concluding also that the Potential Years of Life Lost are higher among adults from 65 to 69 years when compared with the rest of the population.

To ensure strategies looking for increasing the number of geriatric patients with cancer that may undergo a global assessment, in 2019 the first Oncogeriatrics Update Workshop was held in Chile with the support of the Chilean Geriatrics and Gerontology Society, becoming this meeting the first step of oncogeriatrics in Chile.

Unfortunately, only a few months later, the world started to be badly attacked by the SARS-COV-2 pandemic avoiding wider dissemination of this specialty in Chile.

A report from the United Kingdom showed that patients older than 60 years old with active COVID-19 infection have a significantly higher chance to die of cancer when compared with the younger population [47]. As in the rest of the world, in Chile, the pandemic has delayed the diagnosis and treatment of cancer patients resulting in an excess of cancer-related deaths [48].

Currently, in Chile there are only 173 geriatricians recognized by the Superintendency of Health, most of them are practicing in the Metropolitan Region, which includes nearly half of the country's population [49]. This deficit of specialists makes it impossible to follow the international recommendations, nevertheless, some health centers in Chile are already practicing oncogeriatrics.

Conclusions:

The increase in the number of elderly people with cancer in Chile is a recognized fact and we must be prepared to face and carry out a multidimensional diagnosis and offer them quality care and appropriate and individualized treatment.

Older people are per se a heterogeneous population. Despite the high incidence of cancer among this population, it has historically been an underrepresented group in clinical trials, and we have less data to define a beneficial therapy that implies less toxicity, better tolerance, and quality of life. There are special conditions such as geriatric syndromes that have been associated with undesirable events treatment-related that can be prevented and recognized in a comprehensive geriatric assessment allowing its early management to avoid a worsening in quality of life when possible.

Beyond the challenges that the elderly represent and its relationship with higher chances to develop cancer, there is a lack of trustable information that allows correct comparisons between different Latin American countries to estimate the real burden of cancer among the geriatric population of this part of the world. Currently, Latin America and the Caribbean have 1.5 million new cases per year, but it is expected that by 2040 this number will be increased to 2.4 million new cases per year, and most of these patients will be 65 years and older [50]. In the region, the most frequent types of cancer are prostate (15%), breast (14%), colorectal (9%), lung (7%), and gastric cancer (5%). Lung tumor is still the leading cause of mortality cancer-related. In 2020, the Incidence Age Standardized Rate (ASR) for Latin America and the Caribbean, and Chile was 186.5 and 180.9/100,000 inhabitants, and the Mortality ASR was 86.6 and 87.4/100,000 inhabitants respectively. Despite the relevance of the need for oncogeriatric services in Latin America, there are only 3 countries with representatives of the International Society of Geriatric Oncology: Mexico, Brazil, and Chile [51].

Today in Chile there are a dozen of geriatricians with some degree of training in oncogeriatrics but there is not a recognized oncogeriatric unit yet. Half of these professionals work, completely or partially, with an oncological group. 50% of them work in the private system of health, and the rest of them support cancer patients without being integrated into a cancer team. Due to the increase in the elderly population in Chile and the increase in cancer rate among this group, it is essential to promote the development of oncogeriatrics and to create units of this specialty in the country. Spain has created oncogeriatrics units, which will serve as an example to develop similar units in Chile [52], nevertheless, only 14% of the oncological departments account for an oncogeriatrician [53]. In the USA, where 50% of cancer patients are 65 years or older, the need to integrate practice nurses into ambulatory care shows to be an effective tool to support oncogeriatric teams [54].

Considering that in Chile currently there are 25 public oncology services for adults we aim that it should be at least one oncogeriatrician per service.

Interdisciplinary collaborative work is required for subsequent updates and for the creation of local guidelines looking to support the different specialists who increasingly treat more elderly people with cancer in Chile. In addition, we must work to develop an adequate follow-up plan facing early possible difficulties as a result of the treatment complications and the early detection of other oncological pathologies in cancer survivors.

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