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Development of a comprehensive multidisciplinary geriatric oncology center, the Thomas Jefferson University Experience

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ARTICLE INFO

Article history:
Received 21 June 2013
Received in revised form
4 October 2013
Accepted 8 January 2014
Available online 1 February 2014

Keywords:
Geriatric
Adult
Oncology
Senior
Multidisciplinary
University
CGA

ABSTRACT

Background: The proportion of older patients with cancer is expected to grow exponentially in the next two decades. This population has large heterogeneity and it is well known that chronologic age is a poor predictor of outcomes. Research has shown that these patients are best served with a Comprehensive Geriatric Assessment (CGA) to formulate individualized treatment plans for better outcomes. However, the best model for CGA has yet to be determined.
Materials and Methods: Our objective was to develop a highly functional model for the establishment of a comprehensive multidisciplinary geriatric oncology center in the setting of a university based NCI-designated cancer center. Each patient is evaluated by medical oncology, geriatric medicine, pharmacy, social work and nutrition. Expert navigation is provided to enhance the patient experience. At the conclusion, the inter-professional team meets to review each case and formulate a comprehensive treatment plan. The patient is classified as Fit, Vulnerable, or Frail based on the complete CGA.
Results: The average age of patients seen was 80.7 with the most common diagnoses being breast, colorectal and lung cancers. Twenty four percent of patients were determined to be Fit, 47% Vulnerable, and 29% Frail. Twenty one percent of patients determined to be Frail by CGA received an ECOG score of 0–1 by the oncologist. Our pharmacists made specific recommendations in over 75% of patients and social work provided assistance in over 50% of patients.
Conclusions: We were able to observe some interesting trends such as potential discordance with ECOG score and assessment of Fit/Vulnerable/Frail but due to limitations in the data, this paper is not able to illustrate definitive correlations. Several challenges with the development of the clinic include 1) patient related issues, 2) navigation, 3) financial reimbursement, 4) referral patterns, and 5) coordination of care during office hours. We feel that we have been able to establish a model for a comprehensive multidisciplinary geriatric oncology evaluation center in the setting of a university based cancer center.

1. Introduction

The US population over the age of 65 is expected to double in size by 2030, and the cancer incidence is 11 fold higher in this age group. About 60% of all cancers and 70% of all cancer mortalities occur in people over 65 years of age.[1] Despite the high incidence, we are only beginning to understand the best way to care for these patients.

Studies have shown that older patients with cancer frequently experience both over and under treatment of

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http://dx.doi.org/10.1016/j.jgo.2014.01.003

their disease.[5] One of the biggest challenges remains the heterogeneity of the older population. It is well documented that chronological age alone is a poor predictor of how a patient will tolerate treatment.[2,3] Assessment of a patient's "functional" age is a much better predictor of outcome and is more useful in determining an individualized treatment plan [4].

Aging is associated with physiologic changes that can affect cancer therapies including reduced renal function, decreased gastrointestinal absorption and decreased bone marrow reserve.[6] Older adults frequently have multiple co-morbid conditions and common geriatric syndromes including frailty, cognitive impairment, depression, failure to thrive and frequent falls. They are more likely to have functional dependence in instrumental activities and activities of daily living. Poly-pharmacy is a common problem and can lead to adverse events, as well as drug to drug interactions.

Historically, older adults have been woefully underrepresented in oncology clinical trials.[6] A 2003 study found that adults over 65 years represented only 32% of the populations studied.[7] Older patients are often excluded due to co-morbid conditions, organ system impairment, or belief from providers that they are incapable of tolerating treatment or will have limited long term benefit.[6] With limited evidence from clinical trials, it is difficult to formulate evidence based treatment recommendations for this rapidly expanding population.

Furthermore, cancer biology may present differently in older adults, making evidenced based treatment recommendations even more important. For example, acute myeloid leukemia tends to be more aggressive and more resistant to treatment in older patients. Conversely, breast cancer in older women is usually less aggressive and more likely to be hormone receptor positive, allowing for targeted and hopefully less toxic therapies.[6]

As chronological age is a poor predictor of treatment tolerance it is also not a reliable indicator of life expectancy. A person's "functional" age may not predict an exact life expectancy but can allow a physician to predict whether a patient will likely live longer or shorter than the average person of a similar age. Tools such as the Walter and Covinsky life data tables can assist with formulation of these predictions.[8] Other prognostic tools, such as the Lee Mortality Index can stratify patients into varying risk of mortality.[9] Predicted life expectancy is critical to formulating treatment recommendations in the context of the aggressiveness of a particular cancer diagnosis and the relative value of therapeutic options.

The above factors have made individualized treatment for older patients with cancer critical. Comprehensive Geriatric Assessment (CGA) refers to a multidisciplinary evaluation of an older individual's functional status, co-morbid medical conditions, cognition, medication regimen, psychological state, social support, and nutritional status.[10] CGA is considered the "gold standard" for geriatric assessment.[11] It has been shown in some studies to improve detection of medical, functional and pharmacologic problems that could affect prognosis and treatment decisions.[12,14] It has been found that evaluation of instrumental activities of daily living provides a better assessment of functional status then Eastern Cooperative Oncology Group (ECOG) performance status alone. Specific to oncology, CGA has been shown to improve prediction of survival, chemotherapy toxicity, and postoperative morbidity and mortality.[13,14] It is currently "strongly" recommended for all patients with cancer over the age of 70.[5]

A CGA allows the clinician to classify patients into one of three "stages of aging" as described by Balducci et al.: Fit, Vulnerable, or Frail. Fit patients have the highest level of health, minimal co-morbidity and no functional dependence. Vulnerable patients have some dependence in instrumental activities of daily living, have co-morbidities that are well controlled, or may exhibit early symptoms of a geriatric syndrome. Frail patients have three or more co-morbidities, dependence in one or more activities of daily living, or a clinically significant geriatric syndrome.[15] Fit patients are candidates for almost any cancer treatment and have similar outcomes to their younger counterparts. Frail patients can be expected to do poorly with cancer treatment and may be best served by a recommendation for supportive care. Vulnerable patients require the most individualized approach and may benefit from modified therapy, as well as aggressive supportive care throughout treatment.[3]

Despite the emerging evidence to support CGA in older patients with cancer, the best model for CGA remains to be determined.[5] Many current models involve a frailty screening process first, followed by a referral for additional assessment if the individual screens as vulnerable or frail. Additional evaluation should include assessment of functional status, a review of co-morbid medical conditions, screening for cognitive impairment, a complete review of medications, screening for psychological distress and poor social support, and a nutritional screen.

2. Materials and Methods

To provide better comprehensive cancer care to older patients, Thomas Jefferson University's Kimmel Cancer Center (KCC) developed the Senior Adult Oncology Center (SAOC) in September of 2010. This center provides a multidisciplinary evaluation for seniors aged 70 and above both newly diagnosed and established patients referred by different mechanisms including self-referral, medical oncology, primary care, and surgery. Each patient is evaluated by medical oncology, geriatric medicine, pharmacy, social work and nutrition during an approximately two hour visit. Expert navigation is provided to enhance the patient experience by enabling the health care professions to do their evaluations in a smooth, coordinated fashion.

The descriptive data analyses presented in this paper is intended to summarize the pertinent features of the geriatric population seen at Thomas Jefferson University. The data included in the tables are presented as means with corresponding standard deviations. Where applicable the data is presented to categorize by stages of aging (fit, vulnerable or frail). We choose the variables that are felt to be the most relevant to the geriatric population by the geriatric team and were used to determine the Fit, Vulnerable and Frail