Original Contribution

Falls in Older Adults With Cancer: Evaluation by Oncology Providers

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Abstract

Purpose: Falls in older adults are common. Screening for falls is quick, simple, and important because falls increase the risk of morbidity and mortality in older patients with cancer. The aim of this study was to evaluate oncology providers' recognition of and response to falls in older patients with cancer.

Materials and Methods: From a sample of older patients with cancer who completed a geriatric assessment blinded to oncology providers, we identified patients who self-reported falls within the past 6 months. Their history and physical and/or clinic notes completed by an oncology provider were reviewed for the following: documentation of falls, gait assessment, referral to geriatrics or physical and/or occupational therapy, and measurement of 25-hydroxy vitamin D level.

Results: In our sample of older patients with cancer who reported at least one recent fall (N = 125), the average age was 72 years (range, 65 to 93 years), 78% were female, and 62% had a breast cancer diagnosis. Chart reviews showed that 13 (10%) had falls documented, 25 (20%) had a gait assessment, eight (6%) were referred, and 21 (17%) had vitamin D level measured.

Conclusion: We found that only 10% of older patients with cancer who self-reported a recent fall had appropriate medical record documentation. Oncologists are often the primary care providers for older patients and are largely unfamiliar with the frequency and impact of falls in this population. There is a need to increase awareness of falls prevalence and consequences among oncology providers in order to provide timely interventions to reduce the risks associated with falls.

Introduction

Falls are a major cause of morbidity and mortality in persons 65 years or older, with as many as one in three community-dwelling elders reporting a fall in the previous year.[1-4] This is likely to be an underestimate, as there is evidence that less than 50% of patients voluntarily report a fall to their health care providers.[5] Risk factors for falls among older persons include a prior fall, visual impairment, certain medications or polypharmacy, gait/balance abnormalities, muscle weakness, neurologic impairments, cardiac rate or rhythm disturbances, postural hypotension, improper footwear, and environmental hazards.[4,6,7] Falls are of concern because 20% to 30% of falls in the elderly lead to serious injuries that in turn can result in declines in function and an increased likelihood of institutionalized care.[3,8] Even if a fall does not result in an injury, it can precipitate a fear of falling that can lead to reduced activity and a decrease in physical function.[9,10] The American Geriatrics Society recommends that all older adults under the care of a health professional be screened for falls at least annually.[7]

There is a particular need for falls screening among older patients with cancer, as cancer is largely a disease of aging. Currently, the median age of a new cancer diagnosis is 66 years, with the majority of cancer deaths occurring after the age of 70.[11] The older adult population is rapidly increasing in the United States, from an estimated 40.3 million in 2010 to a projected 74 million by 2030.[12,13] In addition, the incidence of cancer in older adults is expected to increase considerably as the baby boomer generation ages.[14] Given these statistics, there is now and will continue to be a need for oncology providers to assess and intervene on common geriatric syndromes such as falls.

Older patients with cancer have additional risk factors for falls when compared with the general population of older adults, as toxicity from cancer treatments can increase the risk of falls.[15,16] In one study, the presence of falls was shown to be associated with an increased risk of serious chemotherapy toxicity in older patients with cancer.[17] Falls evaluation is critical for older patients with cancer, as it provides a means to gauge the patient's functional status[18] and may be an important consideration with regard to treatment decisions.[17]

Screening for falls can be as simple as inquiring about the number of falls the patient has experienced in the past 6 months and documenting this as part of the clinical evaluation. Early identification of falls presents an opportunity to initiate timely interventions. Meta-analyses have shown that multifactorial interventions can be effective in reducing falls risk in older adults.[19,20] Falls interventions can potentially lead to improvements in function, treatment tolerability, and overall quality of life for older patients with cancer.

Whether oncology providers are documenting falls in the medical record and/or providing the appropriate interventions or services to older adults who fall is unknown. The aim of this study was to evaluate oncology providers' recognition and response to falls in older patients with cancer.

Materials and Methods

Sample

The sample for this study was identified from an institutional database called "Carolina Senior: University of North Carolina Registry for Older Patients." The University of North Carolina

Institutional Review Board approved the Carolina Senior Registry (CSR) in 2009 (Clinical Trial No. NCT01137825). The CSR contains cross-sectional geriatric assessment (GA) data on patients 65 years or older seen at the North Carolina Cancer Hospital, a large academic comprehensive cancer center, and 11 community oncology clinics throughout the state. Informed consent was obtained from each participant before they completed the GA, which was administered by trained clinical research assistants to each patient once during various treatment phases. The GA used for the CSR was developed by Hurria et al and includes valid and reliable measures of geriatric domains pertaining to physical function, independent activities of daily living (IADL), medications, medical comorbidity, nutritional status, psychosocial status, social support, and cognitive function.[21] This GA has also been integrated into oncology cooperative group trials and has been shown to be feasible in academic and community oncology clinics.[22,23]

Measures

As of October 2013, the CSR contained GA data for 1,035 patients with cancer. Only patients seen at the North Carolina Cancer Hospital—a total of 528—were included in our analysis. The patients recruited from community oncology clinics were excluded from our analysis because of limited access to their patient charts, which were needed for our review. The patient self-report section of the GA includes the question, "How many falls have you had in the past 6 months?" The patient records a number in the box provided to answer this question. The history and physical and/or clinic notes completed by an oncology provider within 6 months after completion of the GA were retrospectively reviewed for the following: (1) documentation of falls, (2) documentation of a gait assessment, (3) new referrals to geriatrics or physical therapy (PT) and/or occupational therapy (OT), and (4) measurement of 25-hydroxy vitamin D level. These outcome variables were selected because (1) falls are a major cause of morbidity and mortality [2,3] and therefore should be screened for by oncology providers and documented in the medical record; (2) gait assessment can identify patients in need of further intervention[7]; (3) PT, OT, and/or geriatrics referrals represent important interventions for patients with a history of falls[24,25]; and (4) low vitamin D levels are commonly found in older adults,[26] and supplementation has been shown to reduce falls risk.[7,27-29] We note that oncology providers did not have access to the findings from GA evaluations conducted on their patients for the CSR. The GA data were collected independently for the purpose of a registry and were not at any time shared with the patient's treating oncology provider.

To describe the functional status of the 125 patients who self-reported falls, we analyzed the following GA data: self-reported Karnofsky performance status,[30] IADL,[31] ability to walk one block, and ability to climb one flight of stairs. IADL items inquire about the patient's ability to use the telephone, avail themselves of transportation, shop, prepare meals, do housework, manage their own medications, and manage their own finances.

Data Analysis

Frequencies and percentages are reported, and exact 95% binomial CIs are provided for key estimates. All analyses were conducted using SAS Statistical Software v9.3 (SAS Institute, Cary, NC).

Results

Of the 528 patients with cancer in the CSR seen at the North Carolina Cancer Hospital, 125 (24%) reported at least one fall in the previous 6 months. Of these 125 patients, 67 (54%) had one fall, 31 (25%) had two falls, and 27 (22%) had three or more falls.

Patient characteristics of the 125 patients who self-reported at least one fall are shown in Table 1. The median age was 71 years, with an age range of 65 to 93 years and average age of 72 years. Most patients were female (n = 97; 78%), white (n = 108; 86%), and had a breast cancer diagnosis (n = 77; 62%). Close to half (n = 58; 46%) were assessed during active cancer treatment.

Table 2 describes the functional characteristics of the 125 patients. Forty-four patients (35%) had a self-reported Karnofsky performance status score of 70% or less, which indicates functional impairment. Forty-four patients (35%) were limited in their ability to walk one block, and 56 (45%) were limited in their ability to climb one flight of stairs.

Findings from our chart review of the 125 patients with a falls history are summarized in Table 3. Only 13 charts (10%; 95% CI, 6% to 17%) contained oncology provider notes documenting the presence of falls, either during the initial encounter or within 6 months after completion of the GA. There were three documented referrals from the oncology providers who recorded falls in the chart, five patients had their vitamin D levels measured, and three patients had a gait assessment documented.

Of the 125 patients who self-reported a recent fall, a gait assessment was documented for 25 patients (20%; 95% CI, 13% to 28%), and the majority were recorded as "normal" or "unremarkable." Referrals to PT and/or OT were made for four patients (3%; 95% CI, 1% to 8%); four referrals (3%; 95% CI, 1% to 8%) were made to geriatrics. Two of the PT/OT referrals were for lymphedema. Of the eight referrals to PT/OT and geriatrics, one patient received a referral to both, so the rate of any referral was 6%. Levels of 25-hydroxy vitamin D were measured for 21 patients (17%; 95% CI, 11% to 25%), primarily within the context of assessing bone health.

Discussion

In our sample of older patients with cancer seen in an academic comprehensive cancer center, we found that oncology providers rarely recorded or responded to falls in their older patients. We found minimal evidence of documentation of falls in the patients' medical records or actions that would suggest oncology provider awareness of interventions that could lower the risk of future falls. We found that no more than 17% of older patients with cancer who experienced falls had appropriate medical re-

Table 1. Patient Characteristics (N = 125)

Characteristic	No. (%)
Age, years	
Median	71
65-69	55 (44)
70-74	32 (26)
75-79	20 (16)
80-84	9 (7)
≥ 85	9 (7)
Sex	
Female	97 (78)
Male	28 (22)
Race	
White	108 (86)
African-American	16 (13)
Other	1 (1)
Cancer type	
Breast	77 (62)
Hematologic	19 (15)
Lung	11 (9)
GI	8 (6)
Head and neck	5 (4)
Genitourinary	3 (2)
Other	2 (2)
Phase of treatment	
Pretreatment	30 (24)
During treatment*	58 (46)
Post-treatment	37 (30)
Educational level†	
Less than high school	12 (10)
High school graduate	51 (41)
Associate/bachelor's	37 (30)
Advanced degree	25 (20)
Marital status†	
Married	70 (57)
Divorced	18 (15)
Widowed	29 (23)
Single	7 (6)
Employment status†	
Employed	12 (10)
Disabled, medical leave	19 (16)
Retired, homemaker	91 (75)

* During treatment denotes patients receiving chemotherapy, radiation, and other forms of cancer-directed therapy excluding endocrine therapy.
† Not all percentages add to 100% as a result of rounding.

Table 2. Functional Characteristics (N = 125)

Characteristic	No. (%)
No. of self-reported falls*	
1	67 (54)
2	31 (25)
≥ 3	27 (22)
Self-reported KPS, %*	
100, normal	28 (22)
90, carry on normal activity	29 (23)
80, normal activity with effort	24 (19)
70, care of self	9 (7)
60, require occasional assistance	28 (22)
50, require considerable assistance	5 (4) 2 (2)
40, disabled	
Use the telephone	
Without help	120 (96)
With some help	4 (3)
Unable	1 (1)
Avail transportation	
Without help	95 (76)
With some help	28 (22)
Unable	2 (2)
Shop	
Without help	92 (74)
With some help	29 (23)
Unable	4 (3)
Prepare meals	
Without help	98 (78)
With some help	21 (17)
Unable	6 (5)
Do housework	
Without help	70 (56)
With some help	44 (35)
Unable	11 (9)
Manage medications	
Without help	110 (88)
With some help	15 (12)
Unable	0 (0)
Manage finances	
Without help	105 (84)
With some help	17 (14)
Unable	3 (2)
Walk one block	
Not limited at all	81 (65)
Limited a little	21 (17)
Limited a lot	23 (18)
Climb one flight of stairs	
Not limited at all	69 (55)
Limited a little	32 (26)
Limited a lot	24 (19)

Abbreviation: KPS, Karnofsky performance status.
* Not all percentages add to 100% as a result of rounding.

cord documentation or referrals. Because oncology providers did not have access to findings from the GA, this study demonstrates that oncology providers do not routinely document the presence of falls in older patients with cancer. In the absence of documentation of falls in the medical record, it is likely that older patients who fall are going unrecognized by oncology providers. Oncology providers need to be able to recognize falls given that 50% of older adults with advanced cancer will expe-

Table 3. Results of Chart Reviews (N = 125)

Outcomes	No. (%)	95% CI
Falls documented	13 (10)	6% to 17%
Gait assessment	25 (20)	13% to 28%
Vitamin D level	21 (17)	11% to 25%
Referrals	7 (6)	2% to 11%

NOTE. Referrals = physical therapy, occupational therapy, and/or geriatrics.

rience a fall that is associated with a high risk of morbidity and mortality.[32,33] Because falls can result in functional declines [8,10] and cancer treatments place older patients at an increased risk of falls,[15,16] it is important for oncology providers to screen for falls as part of a routine evaluation.

In light of the nationwide shortage of geriatricians,[34] it is important for oncology providers not only to screen for falls, but also to evaluate and provide interventions or referrals as needed. Although some oncology providers (20%) in our sample did report a gait evaluation in their physical exams, the majority of assessments were recorded as normal or unremarkable. One explanation for this finding is that oncology providers may be uncertain about conducting or interpreting a formal gait assessment. Knowing the basics of a falls evaluation is important for oncology providers in order to provide appropriate interventions. Commonly, older adults fall as a result of abnormalities in gait, balance disorders, and/or muscular weakness.[4] A gait assessment is a simple evaluation that all clinicians can perform in clinic to assist in determining the need for further interventions or referrals.

In this study, we collected information on referrals to PT, OT, and/or geriatrics and found that only seven patients were referred. Older adults who fall benefit from referrals to PT and/or OT for further rehabilitation and exercise programs.[24,25] On the basis of a review of the patients' GA data, almost 50% of patients in our study who reported a fall were limited in their ability to climb a flight of stairs, and just over a third were limited in their ability to walk one block. It is likely these patients would have benefited from PT. Similarly, at least 44% of patients reported limitations in at least one IADL, for which an OT referral would have been suggested. Referral to a geriatrician could further assist with identification of and intervention in other potential causes of falls such as polypharmacy, frailty, and medical comorbidity.

Vitamin D deficiency is common in older adults[26] and is associated with balance problems,[35] impaired lower extremity function,[36] and muscle weakness.[7] Vitamin D supplementation is an important intervention that was shown to reduce the risk of falls by at least 20% in a meta-analysis of ambulatory and institutionalized older adults.[28] In our sample, vitamin D was evaluated in 17% of patients who had a falls history, generally as part of an osteoporosis evaluation for patients receiving endocrine therapy for breast cancer.

By ensuring adequate vitamin D supplementation, oncology providers could easily provide an effective evidence-based intervention known to reduce the risk of falls.[7,27-29] Because vitamin D deficiency is so common in older adults and has been associated with a variety of poor health outcomes,[26,37] vitamin D supplementation should be considered in all older patients with cancer.

Our study has some limitations. Recruitment for the CSR used in our study was done through nonrandomized sampling of patients from oncology clinics, which could result in selection bias. Charts were retrospectively reviewed for only one large academic site as a result of difficulties in obtaining chart information from outside clinical locations, and may not be representative of all clinical sites. Although our study found low rates of documentation of falls, gait assessments, and referrals in patients' charts, it is possible that oncologists are performing some of these activities but are not including the supporting documentation in the medical record. An analysis of claims data might have uncovered falls-related activities, to the extent that such activities were billable.

These results, while dramatic, are not surprising given that oncologists are not formally trained in the basic principles of geriatric medicine. Oncology providers also have major time constraints, limiting their ability to perform the expanded evaluations needed to assess the complex issues that affect many older patients with cancer. This study demonstrates the need to increase oncology providers' awareness of falls, provides further evidence that our current standard oncologic evaluation is missing this critical information, and highlights the need to include falls screening as a routine component in the treatment of older patients with cancer.

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