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Original Article

Prospective Comparison of Geriatric Assessment and Provider's Assessment of Older Adults With Metastatic Breast Cancer in the Community

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Abstract

Background: Geriatric assessment (GA) is recommended for evaluating fitness of an older adult with cancer. Our objective was to prospectively evaluate the gaps that exist in the assessment of older adults with metastatic breast cancer (OA-MBC) in community practices (CP).

Methods: Self-administered GA was compared to provider's assessment (PA) of patients living with MBC aged ≥65 years treated in CP Providers were blinded to the GA results until PA was completed. McNemar's test was used to detect differences between PA and GA.

Results: One hundred patients were enrolled across 9 CP (median age 73.9). Geriatric assessment detected a total of 356 abnormalities in 96 patients; of which, 223 required interventions. African American and widowed/single patients were more likely to have abnormalities identified by GA. On average, across 100 patients, PA did not detect 25.5% of GA-detected abnormalities, mostly in functional status, social support, nutrition, and cognition. These differences were less pronounced among providers with more clinical experience. Patients with abnormal Timed Up and Go tests more likely had additional abnormalities in other domains, and more abnormalities that were not identified by PA. Providers were "surprised" by GA results in 33% of cases, mainly with cognitive or social support findings, and reported plans for management change for 39% of patients based on GA findings.

Conclusions: Including a GA in the care of OA-MBC in CP is beneficial for the detection of multiple abnormalities not detected by routine PA.

Key words: breast cancer; clinical oncology; elderly; geriatric assessment; geriatrics.

Implications for Practice

This study evaluated the current practice patterns and gaps that exist in the assessment and management of older adults with metastatic breast cancer in the community. We compared the number of geriatric abnormalities detected by geriatric assessments to routine provider's assessments and found a significant number of geriatric abnormalities missed by routine provider's assessments.

Introduction

Although advancements have been made in the treatment of metastatic breast cancer (MBC), recent studies continue to show under-treatment and inferior outcomes of older adults compared to younger patients.[1] Care of older adults with MBC (OA-MBC) is challenging due to underlying co-morbidities, lack of social support, and diminished functional reserve.[2] Understanding the special considerations required for

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management of these patients is of high importance to ensure optimal outcomes. The National Comprehensive Cancer Network (NCCN) Guidelines for Older Adult Oncology recommends a geriatric assessment (GA) prior to treatment initiation using validated tools such as the Cancer Specific Geriatric Assessment (CSGA).[3] The CSGA allows for an accurate evaluation of physical, cognitive, psychological, and social status and has been shown to predict survival in older patients.[4-6] Similar recommendations are outlined by the International Society of Geriatric Oncology (SIOG) and the American Society of Clinical Oncology (ASCO).[7,8] The use of screening tools to identify patients who could benefit from a comprehensive GA has also been supported by guidelines; however, these tools are rarely used in clinical practice.[9] Most providers routinely use the ECOG or Karnofsky performance status scales to determine patients' eligibility for treatment, despite studies showing the challenges of using these subjective tools.[10,11] Alternatively, the objective Timed-Up and Go (TUG) test has been linked to disability, falls, frailty, global health decline, as well as a predictor of 1-year mortality in breast cancer and can serve as a useful assessment tool in clinic.[12-15]

The majority of patients living with OA-MBC are treated in community practices (CP) where the utilization of GA is very low.[16] In this study, we aimed to understand the gaps that exist in practice in the assessment and management of OA-MBC by comparing the findings of the geriatric assessment to routine provider's evaluation. We further explored a hypothesis that a TUG test could be a universal screening tool to identify older patients with MBC who may benefit from a full geriatric assessment.

Methods

This study took place at community practices identified through the NCCN Affiliate Research Consortium. The study overview can be seen in Fig. 1. Approval was obtained from the Institutional Review Board (IRB) at Fox Chase Cancer Center serving as the central IRB for all the sites. All providers (physicians, nurse practitioners, and physician assistants) at participating sites were offered opt-in participation between November 2016 and August 2018 and completed an informed consent prior to enrollment. Consented providers completed a needs assessment questionnaire capturing their demographics (age, education, years of experience, disease site focus, and previous training in geriatrics), and practice characteristics (number of OA-MBC in the practice, sequence of therapy for various subtypes of MBC). Providers also self-reported their use of GA in routine practice and answered specific questions evaluating the tools used for each evaluation of each domain. This was done to clarify the providers' understanding of what a geriatric assessment should ideally include. These providers participated in a 1-h virtual didactic session focusing on geriatric assessment and treatment approach for OA-MBC patients.

Older adults with MBC were identified in the practice of each of the participating providers. Eligible patients were ≥65 years of age, patients with MBC on active therapy, able to understand English, sign informed consent, and had a life expectancy ≥3 months. Consented patients underwent a routine clinical evaluation by the provider who summarized the proposed oncologic therapy, specific geriatric issues requiring attention, and referrals made to other services (physical therapy, nutrition, social services, and geriatrics). We did not limit, suggest, or restrict any portion of the provider's routine clinical evaluation. During the same clinic visit, the patient completed the self-assessment portion of the GA, followed by an evaluation of cognition, nutrition, comorbidities, and gait by the research coordinator. Data and calculated scores of all assessments were entered into a secure de-identified portal using REDCap[17] and reviewed centrally by the study team. A report summarizing the GA results and recommended interventions was then generated and transmitted back to the provider for review. The intervention recommendations for each assessment were stratified as either "Suggested" or "Required" based on the score of each assessment in line with published recommendations.[8] A sample of the comprehensive GA summary report is available in Supplementary Material. Upon

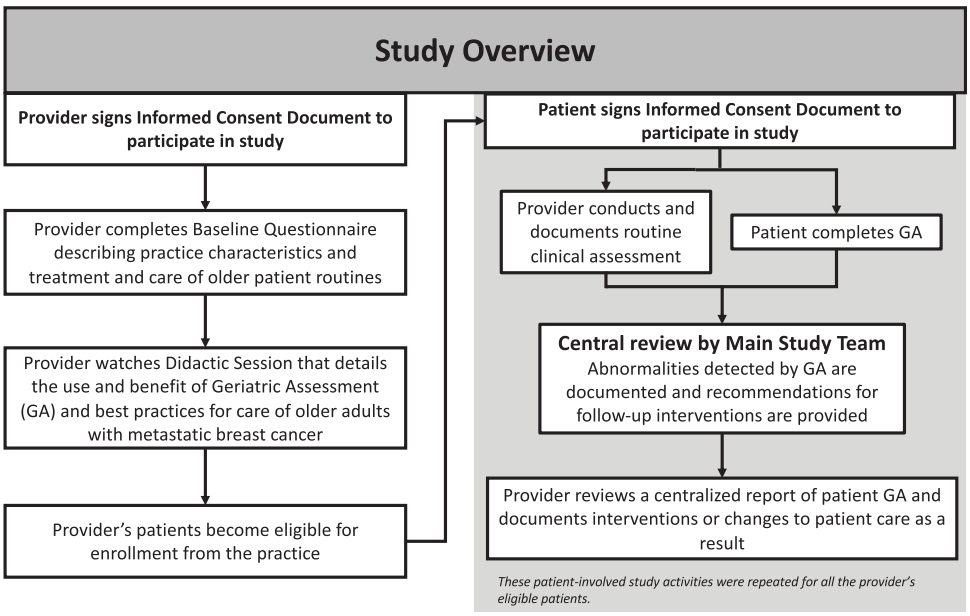

Figure 1. Longitudinal schema of educational intervention.

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receipt and review of this report, the provider completed a questionnaire indicating whether they were surprised by the results and their plans for any treatment modifications or supportive care referral.

In this report, we focus on the comparison between the findings of the GA and the routine clinical assessment of the providers (PA). The GA used in this study included a patient's self-administered portion including Activities of Daily Living (ADL),[18] Instrumental Activities of Daily Living (IADL),[18] history of falls,[19] unintentional weight loss (UWL) over past 6 months,[20] Medical Outcomes Study Social Support Survey (MOS),[21] and Geriatric Depression Scale (GDS).[22] Research coordinators at each site were trained on implementation and completion of Montreal Cognitive Assessment (MOCA)[23] and the Timed Up and Go Test (TUG).[12] The following were evaluations abstracted from the patient's chart by the research coordinator: BMI,[20] comorbidities (Charlson Comorbidity Index [CCI]),[24] and ECOG Performance Status.[25] For analysis, abnormalities detected by PA and GA were compared, evaluating the abnormality detection rate between PA-only, GA-only (labeled as "not detected"), and detected by both. An exploratory analysis evaluating the percentage of missed abnormalities by PA in relation to ECOG-PS assessment and the TUG tool was also conducted. We selected these 2 variables due to the frequent use of ECOG-PS by clinicians and the objective nature of the TUG tool.

Statistical Analysis

Descriptive statistics were used to summarize and compare provider and patient characteristics across sites. Fisher's exact test was used to compare needs assessment responses between characteristics (eg, routine usage of GA, treatment approaches for older patients with MBC, percentage of patients age ≥65, perceived benefit of GA, evaluation of socioeconomic status). PA- and GA-identified abnormalities were summarized and tabulated. For each patient, we determined the total number of abnormalities found by PA versus GA and compared them via Wilcox tests (considering items that were directly comparable between the assessments). Counts were also categorized as 0–1 versus 2 or more abnormalities for some subsequent analyses. For each item, we also compared the proportions detected/not detected by PA versus GA using McNemar's test for paired data, and we measured agreement using Kappa statistics. For each patient, we calculated the proportion of abnormalities not detected by PA (but detected by GA). Because the ECOG-PS score was determined by the provider in all cases, we did not include this in the comparison between GA and PA. We tested associations between the proportion not detected by PA and provider/patient characteristics (eg, patient age and provider's years in practice). These analyses used linear regression models adjusting for the number of prior subjects the provider had seen (to account for learning from prior GA), with robust standard errors accounting for clustering by the provider.

Results

Provider and Practice Characteristics

The characteristics of 44 providers from 9 practices who participated in the study are summarized in Table 1. The majority were physicians (86%) with equal gender distribution, over 50% Caucasian (57%), and have been in practice for ≥11 years (53%). Providers overwhelmingly felt comfortable caring for OA-MBC (95%) and believed that patients would benefit from a GA prior to starting treatment (80%), yet less than half (41%) self-reported routinely conducting a GA in their practice. Additionally, when questioned about specific tools used for their GA, the majority of providers used patient interviews rather than validated scales, limiting the utility of this type of assessment (ie, only 25% used a validated scale for assessing cognition, Table 1).

Table 1. Provider and practice characteristics ($N = 44$).

	N (%)
Gender	
Female	22 (50)
Male	22 (50)
Race	
Caucasian	25 (57)
Asian	13 (30)
Pacific Islander	1 (2)
Multiple	1 (2)
Refused	4 (9)
Role	
Physician	38 (86)
Physician Extender	6 (14)
Age group	
30–40	17 (39)
41–50	12 (27)
51–60	9 (20)
>60	6 (14)
Years in practice	
<5	9 (20)
5–10	12 (27)
11–15	4 (9)
>15	19 (44)
Prior training in geriatrics or geriatric oncology?	
No	42 (96)
Yes	2 (4)
Estimated percentage of OA-MBC under your care	
<20%	16 (36)
20–40%	16 (36)
41–60%	8 (19)
>60%	4 (9)
I am very comfortable with caring for older patients with MBC	
(Strongly) Agree	42 (95)

Tools used for assessing geriatric domains in routine practice	Validated tools or specialist evaluation	Patient interview only	None
Cognition	11 (25)	26 (59)	7 (16)
Depression	6 (14)	30 (68)	9 (20)
Socioeconomic status	7 (16)	25 (57)	12 (27)
Nutrition	7 (16)	30 (68)	7 (16)
Comorbidities	0 (0)	41 (93)	3 (7)

OA, older adult; MBC, metastatic breast cancer.

Demographic and Disease Characteristics of Patients

Characteristics of 100 patients, treated by 29 providers, who were accrued for the hands-on portion of the project are summarized in Table 2. Most of them were female (97%),

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Table 2. Patient characteristics (*N* = 100).

	Total (*N* = 100)	0–1 Abnormalities (*N* = 28)	2+ Abnormalities (*N* = 72)	*P* value
Age				
Median (range)	73 (65–90)	70.5 (65–86)	73.5 (65–90)	.25
Gender				
Female	97 (97)	27 (96)	72 (97)	.99
Male	3 (3)	1 (4)	2 (3)	
Race				
Caucasian	79 (79)	27 (96)	54 (73)	**.029**
African American/Black	19 (19)	1 (4)	18 (24)	
Refused	2 (2)	0 (0)	2 (3)	
Education level				
≤12 years	42 (42)	10 (36)	32 (44)	.49
>12 years	56 (56)	18 (64)	38 (53)	
Missing/refused	2 (2)	0 (0)	2 (3)	
Marital status				
Divorced/separated	9 (9)	4 (14)	5 (7)	**.001**
Married/domestic partnership	53 (53)	21 (75)	32 (44)	
Single	16 (16)	2 (7)	14 (19)	
Widowed	20 (20)	0 (0)	20 (28)	
Unknown	2 (2)	1 (4)	1 (2)	
Subtype of metastatic breast cancer				
ER/PR+, HER2–	71 (71)	22 (78)	49 (68)	.28
ER/PR+, HER2+	14 (14)	5 (18)	9 (13)	
ER/PR–, HER2+	6 (6)	0 (0)	6 (8)	
Triple negative	7 (7)	1 (4)	6 (8)	
Missing/refused	2 (2)	0 (0)	2 (3)	
Line of therapy				
1st	49 (49)	8 (29)	41 (57)	**.006**
2nd	27 (27)	8 (29)	19 (26)	
3rd	8 (8)	6 (21)	2 (3)	
4th	16 (16)	6 (21)	10 (14)	

ER, estrogen receptor; PR, progesterone receptor.

Caucasian (79%) with a median age of 73 (range 65–90) years. The majority of patients had an education level ≥12 years (56%) and were married or in a domestic relationship (53%). Most patients had hormone-receptor-positive HER-2-negative MBC (71%), and almost half were on first-line therapy (49%). Patients with higher numbers of GA-detected abnormalities were more likely to be Black/African American ($P = .029$), single/widowed ($P = .001$), and on first-line therapy ($P = .006$).

Ninety-six patients had ≥1 abnormality detected on GA. In total, 356 abnormalities were identified; 233 (65%) were categorized as "Intervention Required" (Fig. 2). Required interventions by GA were identified in about half of the patients having limited social support (53%) and cognitive impairment (50%). Over a third of the patients (37%) had functional impairment with an abnormal TUG test requiring intervention, with a similar number reporting recent history of falls (29%). Two-thirds of patients (67%) were identified as having nutritional abnormalities, 30% requiring interventions, and 37% with suggested interventions. Over a third of patients (38%) had comorbidities that placed them at intermediate risk for mortality.

Comparison of PA versus GA

We compared the detection of abnormalities by PA alone (not detected by GA), GA alone (not detected by PA), and detection by both assessments (Fig. 3). Abnormalities in co-morbidities and nutrition were most frequently detected by both assessments, to be expected given the objective data collected in these two areas. When analyzing more complex abnormalities detected by either provider or geriatric assessment, GA was significantly more sensitive than PA in detecting abnormalities in functional status (ADL/IADL) (73% vs. 0%, $P < .001$), social support (86% vs 7%, $P < .001$), and cognition (96% vs 0%, $P < .001$). In addition, GA was also more likely to detect multiple abnormalities in an individual patient ($P < .001$). On average, across the full cohort of patients, 25.5% of possible abnormalities were detected by GA but missed by PA (Fig. 3). We correlated the rate of abnormalities "not detected" (detected by GA but not by PA) with patient and provider variables (Table 3). Patient- and tumor-related variables including age, education level, line of therapy, and tumor subtype did not affect the benefit of the GA over PA. However, African American patients and patients who were not married had higher rates of abnormalities not detected by PA ($P = .005$ and $P = .036$, respectively).

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In terms of provider characteristics, patients treated by providers with more experience had a lower proportion of abnormalities "not detected." Compared to providers with <5 years of practice, those with 11–15 years' experience had 11% less abnormalities "not detected" (P = .028), and providers with ≥15 years in practice had 14% less abnormalities "not detected" (P = .017). Similarly, providers aged 51–60 had 10% less abnormalities "not detected" than providers aged 30–40 (P = .009).

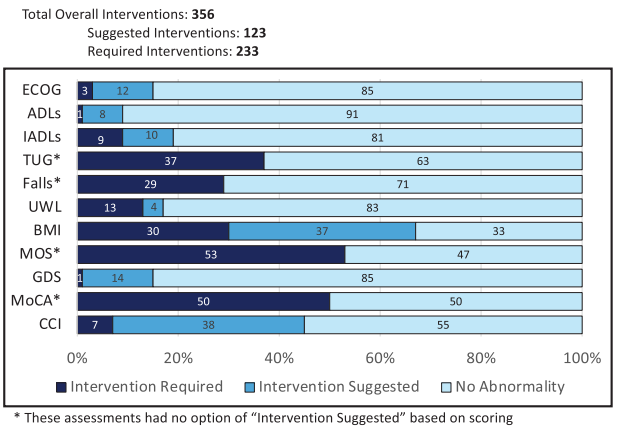


Figure 2. Breakdown of interventions detected on a geriatric assessment by "suggested" and "required" interventions.

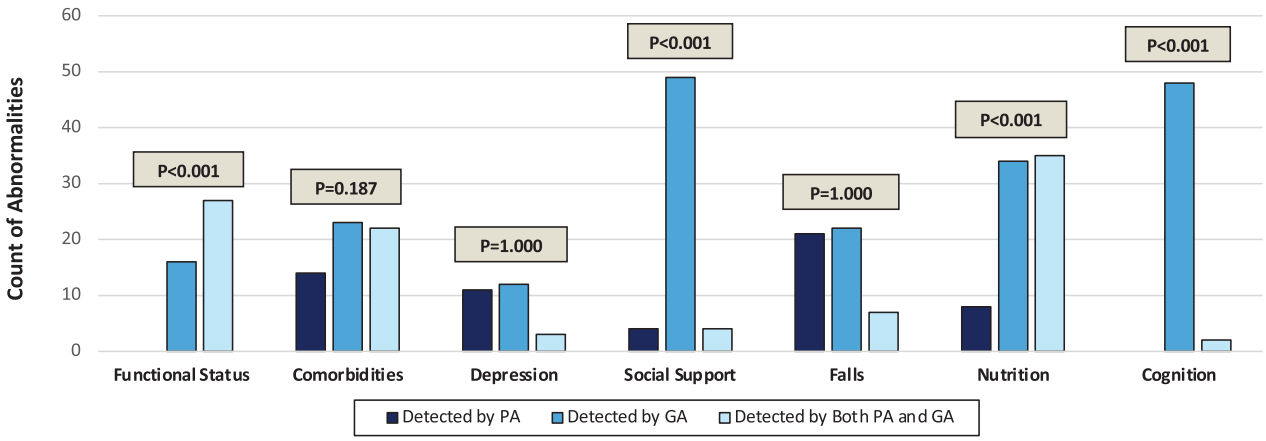
In the exploratory analysis, each point increase in the ECOG PS score was associated with a 4% increase in the rate of abnormalities "not detected" (P = .045). Patients with an abnormal TUG had 13.5% more abnormalities "not detected" ($P \leq .001$).

Timed Up and Go

A separate analysis was conducted focused on the objective TUG assessment given the above findings (Table 4). Patient characteristics were similar between those with normal/abnormal TUG scores, other than older median age for patients with abnormal TUG (75 vs 71 years, P = .0125). Patients with abnormal TUG scores were more likely to have additional GA abnormalities (4.3 vs. 2.1 abnormalities, Wilcoxon $P < .001$), especially functional abnormalities (ECOG PS [$P < .001$], falls [P = .025], ADLs [P = .002], and IADLs [$P < .001$]). In addition, abnormal TUG scores were also associated with an increase in CCI ($P < .001$), cognitive impairment (P = .003), and depression (P = .008).

Providers' Perspective of GA report

Providers found the GA information useful and important in 74% of cases and were surprised by GA results in 33% of cases, mainly with lower cognitive scores (17%) or social support (8%). Providers for 39 patients indicated plans to adjust treatment or supportive care measures based on the GA results with a total of 52 interventions. Of these interventions,



Geriatric Domains	Number of patients with abnormality	Patients with abnormalities detected only by PA N (%)	Patients with abnormalities detected only by GA N (%)	Patients with abnormalities detected by both PA and GA N (%)	P value
Functional Status	22	0 (0)	16 (73) [ADLs and IADls]	6 (27)	**<0.001**
Comorbidities	59	14 (24)	23 (39) [Charlson Comorbidity Index]	22 (37)	0.187
Depression	26	11 (42)	12 (46) [Geriatric Depression Scale]	3 (12)	1.000
Social Support	57	4 (7)	49 (86) [MOS Social Support Scale]	4 (7)	**<0.001**
Falls	50	21 (42)	22 (44) [Patient Self Report]	7 (14)	1.000
Nutrition	77	8 (10)	34 (44) [Unintentional Weight Loss and BMI]	35 (46)	**<0.001**
Cognition	50	0 (0)	48 (96) [Montreal Cognitive Assessment]	2 (4)	**<0.001**
Patients with ≥ 2 Abnormalities	80	8(10)	38 (48)	34 (42)	**<0.001**

Figure 3. Comparison of abnormalities found by provider's assessments (PA) and geriatric assessments (GA) in the various geriatric domains.

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Table 3. Impact of geriatric assessments by patient and provider factors.

Variable	*N*	% of abnormalities "not detected"[a]	% Difference between groups (95% CI)	*P*-value
Patient age				
<75	58	25.4%	–	–
≥75	42	25.5%	0.1% (–0.062–0.64)	.967
Race				
Caucasian	79	23.9%		
African American/Black	19	31.6%	**9.9% (0.032–0.166)**	**.005**
Education level				
>12 years	56	22.5%		
≤12 years	42	28.9%	6.3% (–0.012–0.139)	.09
Marital status				
Married/partnered	53	22.6%		
Not married	47	28.7%	–6.4% (1.124 to –0.004)	**.036**
Line of therapy				
1st line	49	29%	–2.14%[b] (–0.060–0.018)	.275
2nd line	27	22.2%		
3rd line	8	12.5%		
4th line	16	26.5%		
ECOG performance status				
0	32	23.4%	3.97%[b] (0.0009–0.0785)	**.045**
1	53	24.7%		
2	12	32.2%		
3	3	33.3%		
Subtype of metastatic breast cancer				
ER/PR+, HER2–	71	25.3%	–	–
ER/PR+, HER2+	14	24.1%	–1.22% (–0.127–0.103)	.83
ER/PR–, HER2+	6	27%	1.68% (–0.062–0.096)	.668
Triple negative	7	28.5%	3.2% (–0.073–0.137)	.538
Unknown	2	25%	–0.4% (–0.063–0.055)	.887
Timed Up and Go Score				
Normal	63	20.6%	–	–
Abnormal	37	33.7%	13.3% (0.073–0.193)	**.001**
Provider age				
30–40	38	29.6%	–	–
41–50	18	26.3%	–3.6% (0.154–0.081)	.533
51–60	24	19.7%	–9.8% (–0.169 to –0.266)	**.009**
>60	18	22.9%	–6.9% (–0.190–0.051)	.247
Provider years in practice				
<5	10	36.2%	–	–
5–10	37	26.6%	–9.4% (–0.225–0.036)	.149
11–15	3	25%	–11.2% (–0.211 to –0.013)	**.028**
>15	48	22.1%	–14.0% (–0.254 to –0.027)	**.017**

ECOG, Eastern Cooperative Oncology Group; ER, estrogen receptor; PR, progesterone receptor.
[a] Detected by geriatric assessment but not by provider's assessment.
[b] % difference is for a 1-unit increase (ie, 1 higher line of therapy or 1 increase in ECOG score).

30 (58%) were referrals for support services, while 18 (35%) were referrals to social work. Three patients (5%) were referred to a geriatrician, and one patient (2%) had a dosing change to their treatment regimen.

Discussion

Recently, two prospective studies demonstrated that the integration of GA-driven oncologic treatment reduced grade 3–5 chemotherapy toxicity without compromising overall survival in older adults with cancer.[26,27] Despite the known benefits, GA is largely underutilized in the community.[3,16] Our analysis further demonstrates the concerning lack of routine use of validated GA tools by providers; less than half of our providers reported the routine use of GA and the majority were not using validated tools for a comprehensive evaluation of these patients, which raises concerns regarding the data used to guide treatment. This is consistent with prior reports

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Table 4. Comparison of other abnormalities in patients with abnormal versus normal TUG (*N* = 98)

Measures	Abnormal TUG (*N* = 37)			Normal TUG (*N* = 61)			*P* value
	Immediate	Suggested	Total *N* (%)	Immediate	Suggested	Total *N* (%)	
ECOG	2	9	11 (30)	0	2	2 (3)	<.001
Falls	16	N/A	16 (43)	13	N/A	13 (21)	.025
ADLs	1	7	8 (22)	0	1	1 (2)	.002
IADLs	7	8	15 (41)	1	1	2 (3)	<.001
Weight Loss	5	3	8 (22)	7	1	8 (13)	.335
BMI	13	15	28 (76)	15	22	37 (61)	.308
CCI	7	19	26 (70)	0	19	19 (31)	<.001
MOCA	25	N/A	25 (68)	23	N/A	23 (38)	.003
GDS	1	9	10 (27)	0	4	4 (7)	.008
MOS	24	N/A	24 (65)	28	N/A	28 (46)	.095

TUG, Timed Up and Go Test; ECOG, Eastern Cooperative Oncology Group performance status; ADLs, Activities of Daily Living; iADLs, Instrumental Activities of Daily Living; BMI, Body mass index; CCI, Charlson Comorbidity Index; MoCA, Montreal Cognitive Assessment; GDS, Geriatric Depression Scale; MOS, Medical Outcomes Study Social Support Survey.

of only 23% of community oncologists using GA in clinic.[16] The fact that 40% of providers viewed their routine assessment of older adults with MBC as sufficient, despite minimal use of validated scales, highlights the importance of this educational intervention. Furthermore, the significant number of missed abnormalities by PA versus GA highlights the potential benefit to be gained by patients with the incorporation of GA to routine practice.

Older adults with metastatic breast cancer who took part in our study were found to have a significant number of geriatric abnormalities. Age did not affect the benefit derived from GA in our analysis supporting the limited use of age as a sole indicator of fitness for therapy. However, single/widowed as well as African American/Black patients were more likely to have ≥2 GA abnormalities and more likely to have abnormalities missed by PA. This is in line with increased rates of hospital readmissions in African American older adults with cancer reported in the literature.[28] Similarly, a SEER database analysis of breast cancer patients found that unmarried patients were at a significantly higher risk of undertreatment and death.[29] Patients on front-line therapy were more likely to have ≥2 abnormalities detected as compared to patients on later line therapy. This finding is not surprising since a GA evaluates symptoms as well as psychosocial concerns that may be more pronounced with a new cancer diagnosis. These data highlight the sub-populations of older adults with MBC who may derive higher benefit from a GA.

Our data also showed strong correlations between provider clinical experience and the utility of GA, where patients treated by providers with less years in practice benefited more from GA. Surveys of hematology-oncology fellows have previously reported limited education in geriatric oncology.[30] This highlights the need to improve training of our next generation of providers of the unique challenges and management of this patient population to reduce the knowledge gap.

In our study, PA failed to detect on average 25% of abnormalities detected by the GA. In particular, GA was better at identifying abnormalities in functional status, social support, cognition, and nutrition. Consistent with these results, providers indicated that they were most surprised by the GA findings in the social support and cognitive domains. Although the results highlight the sensitivity of GA in the detection of abnormalities in social support and cognition, it is important to understand that the MOS and MOCA used in this study are screening tools with low cutoffs for the detection of these abnormalities. Albeit, the evaluation of the social support and cognitive function of an older adult is crucial, as several studies have demonstrated a direct association between robust social support, cognitive function, and improved treatment tolerance and cancer outcomes.[16,29,31-34]

Interestingly, PA detected a high number of patients with abnormalities in falls, comorbidities, and depression that were not picked up by the GA. Falls were self-reported in the GA by patients, which may account for decreased reporting; alternatively, providers may have overestimated the risk of falls. The discrepancy with regards to comorbidities may be related to providers being more inclusive in their assessment and including comorbidities that are not included in the scripted CCI[24] (ie, hypothyroidism, coagulopathies). With regards to depression, it is unclear why there was low agreement in this assessment. Moreover, none of the providers reported using validated tools to screen for depression. The depression questionnaire used in the GA was self-administered and could result in under-reporting. Alternatively, depression symptoms could be captured better by interactions with a provider with whom the patient has a longer relationship.

An exploratory analysis evaluating the routinely used ECOG-PS and objective TUG as specific tools that can predict geriatric assessment findings showed a stronger predictive ability of TUG. This is consistent with prior studies showing a poor correlation between ECOG-PS and GA.[9,10] In our study, the TUG test was found to be a potentially useful tool for identifying patients with higher rates of other geriatric abnormalities. Patients with abnormal TUG had more abnormalities in other domains and were more likely to have abnormalities "not detected" by PA. Although TUG cannot replace a full GA, inclusion of this quick, objective test can provide valuable information regarding the patient's fitness, and identify a patient who can benefit from a more comprehensive evaluation.

There are several limitations to our analysis. Non-randomized recruitment may have resulted in potential selection bias to more knowledgeable providers or robust patients. Our small sample

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size and focus on OA-MBC patients may limit the generalizability of the results. Furthermore, our population was heterogeneous including patients with various breast cancer types on various treatment regimens, which limits the ability to understand the relationship between these factors and GA findings. In addition, we did not correlate GA results with any outcome measures, thus the actual benefit for the patients cannot be demonstrated. Another confounding factor may be the provider's self-reporting with regards to their assessment of older adults in routine practice. Evaluation of the effect of sporadic use of various assessments on our results is beyond the scope of this study. However, our data show that as a whole, providers who took part in our study did not detect a significant number of abnormalities detected by GA, regardless of their approach to assessing older adults in their routine practice.

Conclusion

Our analysis demonstrates the value of GA and the need for its incorporation into the management of OA-MBC in the community. We found a high detection rate of significant geriatric abnormalities by GA which are often not detected by routine PA. Additional research and educational initiatives are warranted to expand on our findings and incorporate GA into the routine care of older patients in the community which will, in turn, improve the care of this vulnerable patient population.

Supplementary Material

Supplementary material is available at *The Oncologist* online.

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Conflict of Interest

Elizabeth A. Handorf: Pfizer (RF, H), Eli Lilly (RF). The other authors indicated no financial relationships.

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Author Contributions

Conception/design: J.W., L.J.G., E.D. Provision of study material or patients: R.V., J.H., A.P., B.N., K.B., N.R.C., W.F.S., J.W., L.J.G., E.D. Collection and/or assembly of data: C.R.M., B.L., K.A.F., J.E. Data analysis and interpretation: R.S.S., C.R.M., B.L., E.A.H., K.A.F., J.W., L.J.G., E.D. All authors: Manuscript writing and approved the final copy of the manuscript.

Data Availability

The data underlying this article will be shared at reasonable request to the corresponding author.

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