Development of Mini-Comprehensive Geriatric Assessment for the Elderly Cancer Patients Based on Relationships between Comprehensive Geriatric Assessment Items and Performance Status

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Background / Purpose

- The Comprehensive Geriatric Assessment (CGA) is the multidisciplinary evaluation of older patients
- Generally assess functional, emotional, cognitive elements in addition to history and physical examination
- CGA should be made of any of number of valid reliable instruments
- Recent studies have reported its efficacy to predict morbidity and mortality in older cancer patients, but it requires resources and relatively long time to complete it
- The Eastern Cooperative Oncology Group performance status (ECOG-PS) has been widely used to predict response to systematic treatments or overall survival in various cancer patients, but provides very limited information
- This study was designed to explore which items of CGA are highly correlated with ECOG-PS and represent 5 domains (cognitive, co-morbidity, function, nutrition, psycho/social) of CGA in older cancer patients
- These selected items were evaluated as Mini-Comprehensive Geriatric Assessment for the Elderly Cancer Patients (MCGA-C)

Methods

Subjects

- Prospective research project consisting of 200 patients development cohort aged ≥ 65 years with cancer not having CNS metastases, seen by the oncologist
- Patients enrolled to development cohort conducted entire CGA at their initial visit after getting agreement

Measurements

- Instrumental Activities of Daily Living (K-IADL): 10 items
- Hospital Anxiety Depression Scale (HADS): 14 items
- Mini Nutritional Assessment (MNA): 18 items
- Mini-Mental State Examination (MMSE): 12 items
- Charlson's Comorbid Index (CCI): 19 items
- Functional Assessment of Cancer Therapy-General (FACT-G): 27 items
- ECOG-PS by physician

Methods

- Pearson's correlation coefficients was used to show construct validity, sensitivity/specificity compared through receiver operating characteristic (ROC) curve
- Cronbach's α of MCGA-C were compared to those of the items of corresponding measurement tools for reliability
- The selection of items was based on psychometric criteria; those items within each scale that showed the highest item-to-total were selected
- Study procedure for validation cohort were identical to those used in the development cohort except using MCGA-C

Results

Table 1. Demographic and CGA Characteristics

		Development (n = 200) N (%)	Validation (n = 37) N (%)	χ^2	p
Age (Mean $\pm$ SD)		72.1 $\pm$ 5.3	71.8 $\pm$ 5.7	0.31	0.756
Sex	Male	128 (64.0)	20 (54.1)	1.32	0.251
	Female	72 (36.0)	17 (45.9)		
Marital status	Partnered	154 (77.0)	28 (75.7)	0.03	0.861
	Non-partnered	46 (23.0)	9 (24.3)		
Educational level	< middle school	114 (57.0)	23 (62.2)	0.34	0.559
	$\geq$ middle school	86 (43.0)	14 (37.8)		
ECOG	0	75 (37.5)	11 (29.7)	1.04	0.792
	1	69 (34.5)	15 (40.5)		
	2	32 (16.0)	7 (18.9)		
	≥ 3	24 (12.0)	4 (10.8)		
FACT-G	Total score	67.6 $\pm$ 17.2	68.8 $\pm$ 18.0	-0.38	0.705
	physical well-being	20.5 $\pm$ 6.0	20.7 $\pm$ 6.8	-0.22	0.826
	social well-being	15.0 $\pm$ 5.9	15.9 $\pm$ 5.6	-0.86	0.392
	emotional well-being	16.7 $\pm$ 5.0	17.4 $\pm$ 5.1	-0.74	0.462
	functional well-being	15.5 $\pm$ 6.3	14.8 $\pm$ 5.8	0.55	0.581

Table 2. CGA Results

Domain of CGA	N (%)	Mean $\pm$ SD
Functional status by IADL		1.7 $\pm$ 0.5
MNA		21.3 $\pm$ 4.7
Malnutrition (<16.6)	34 (17%)	
Risk of Malnutrition (17-23.5)	99 (51%)	
Normal (≥ 24)	63 (32%)	
HADS-A		4.6 $\pm$ 4.9
Normal (0-7)	153 (78%)	
Mild (8-10)	21 (11%)	
Moderate to severe (≥ 11)	22 (11%)	
HADS-D		7.7 $\pm$ 5.5
Normal (0-7)	104 (53%)	
Mild (8-10)	25 (13%)	
Moderate to severe (≥ 11)	67 (34%)	
MMSE		
Definite normal (≤ 19)	128 (65%)	
Questionable dementia (20-23)	44 (22%)	
Definite dementia (≥ 24)	24 (12%)	
CCI		
1	2 (1%)	
2	60 (31%)	
3-5	54 (28%)	
≥ 6	79 (40%)	

Table 3. Selected items from each domain

Instrument	Number of items	Correlation of selected items
IADL	3	0.92
HADS - Anxiety	2	0.85
HADS - Depression	3	0.88
MNA	3	0.87
MMSE	2	0.76
CCI	1	NA

Figure1-2. Validity of MCGA-C

Figure 1. ROC curve depicting item specificity/specificity of MCGA-C

Figure 2. ROC curve to compare CGA and MCGA-C

Table 4. Correlation of MCGA-C with reference standard

200 patients development cohort

37 patients validation cohort

	correlation coefficients	p-value
ECOG	-0.573	<.0001
FACT-G (total score)	0.715	<.0001
physical well-being	0.636	<.0001
social well-being	0.302	<.0001
emotional well-being	0.588	<.0001
functional well-being	0.590	<.0001

	correlation coefficients	p-value
ECOG	-0.46	.00041
FACT-G (total score)	0.753	<.0001
physical well-being	0.718	<.0001
social well-being	0.205	0.2228
emotional well-being	0.753	<.0001
functional well-being	0.590	<.0001

Conclusion

- MCGA-C (14 items) developed in this study showed good concordance with CGA, FACT-G, ECOG-PS
- Choice of the most suitable tools for geriatric assessment is still a matter of debate, the validation of MCGA-C is still necessary in large prospective trials
- Role of CGA: improve prognosis, identify predictive factor of toxicity $\rightarrow$ No randomized study in geriatric oncology demonstrating the value of CGA
- Limitation of this study: heterogenous tumor/stage, limited number of validation cohort