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Screening for frailty among older patients with cancer that qualify for abdominal surgery

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ABSTRACT

Objective: The Geriatric Assessment (GA) is an established method for evaluating and optimizing diagnostic and treatment plans. However, it requires experience and is time-consuming. Therefore, a variety of screening methods have been developed. The aim of this study was to compare their accuracy for predicting frailty among older patients with cancer qualified for abdominal surgery based on comparison to the GA.

Material and Methods: One hundred and thirty five consecutive patients ≥65 years of age were prospectively enrolled. The diagnostic performance of eight screening tests was evaluated: The Vulnerable Elderly Survey (VES-13), Triage Risk Screening Tool (TRST), Geriatric 8 (G8), Groningen Frailty Index (GFI), abbreviated Comprehensive Geriatric Assessment (aCGA), Rockwood, Balducci and Fried score.

Results: The prevalence of frailty as diagnosed by the GA was 73%. Screening methods identified frail patients in 40–75.5% of cases. The sensitivity and specificity of these tests in predicting frailty were 52%–97% (Fried score-G8) and 44–100% (G8-Rockwood score), respectively. The positive and negative predictive values were 82–100% (Balducci–Rockwood) and 43–84% (TRST–G8), respectively. Age significantly influenced the predictive value of the screening tests whereas gender and type of cancer did not.

Conclusion: At present, there is no universal screening test that adequately identifies frailty in at risk older patients. The results of this study showed that the aCGA and G8 were the best screens for older patients with cancer that qualified for elective abdominal surgery; the G8 had the highest sensitivity and negative predictive value and the aCGA was a good overall assessment tool.

1. Introduction

About one-half of cancer cases and two-thirds of cancer deaths occur in patients 65 years of age or older.[1] The progress in medicine, including the extension of life, suggests that the number of older patients with cancer will significantly increase in the coming years. This group of patients is very heterogeneous with regard to co-morbidity and physical reserve. Therefore, the routine format of medical history, physical examination, biochemistry and imaging tests often does not provide the information needed for optimal and tailored treatment. To help guide treatment decisions a Geriatric Assessment (GA) was introduced. It helps detect patients with decreased physiological reserve arising from cumulative deficits in several physiological systems that in turn can result in diminished resistance to stressors.[2,3] The GA objectively assesses the health status of older patients, focusing on somatic, functional and psychosocial domains; it has proven to be of great value for clinicians treating geriatric patients.[4]

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Table 1 – Glossary of the different screening tests used in the study.

Test	Developed for	Number of items	Range	Cut-off score [a]
VES-13[5]	General older population	13	0–15	≥3
TRST[6]	Older patients at ED	5	0–6	≥1
G8[7]	Oncology patients	8	0–17	≤14
GFI[8]	General older population	15	0–15	≥4
aCGA[9]	Oncology patients	15	ADL: 3	≥1 dependent
			IADL: 4	≥1 dependent
			GDS: 4	≥2
			MMS: 4	≤6
Rockwood[10]	General older population	4	0–3	≥2
Balducci[11]	General older population	4	0–4	1
Fried score[3]	General older population	5	0–5	≥3

Vulnerable Elders Survey (VES-13), Triage Risk Screening Tool (TRST), Geriatric 8 (G8), Groningen Frailty Index (GFI), abbreviated Comprehensive Geriatric Assessment (aCGA); Emergency Department (ED).
[a] Cut-off score for a patient to be considered frail.

However, the GA requires experience, it is time-consuming to administer and not necessary in all patients. Therefore, a variety of screening methods have been developed to identify vulnerable patients that require full Geriatric Assessment prior to treatment. The Vulnerable Elders Survey (VES-13),[5] Triage Risk Screening Tool (TRST),[6] Geriatric 8 (G8),[7] Groningen Frailty Index (GFI),[8] abbreviated Comprehensive Geriatric Assessment (aCGA),[9] Rockwood,[10] Balducci,[11] and Fried[3] screening tests are commonly used. High sensitivity (for the correct identification of frail patients) and high specificity (which limits the number of healthy patients that undergo the GA) would be desirable features for an ideal screening test of at risk frail elderly patients with cancer. This is particularly important in the case of patients eligible for surgery, which can easily destabilize the homeostasis of the body. Therefore, it is important to determine the efficacy of such tests among oncologic patients that qualify for surgery. The aim of this prospective study was to compare the accuracy of the above-mentioned screening methods for predicting frailty among older patients with cancer qualified for abdominal surgery based on comparison to the GA.

2. Material and Methods

2.1. Study Population

Between June 2012 and December 2013, 135 consecutive patients 65 years of age or older, with solid abdominal tumors in need of surgery under general anesthesia, were enrolled in this prospective study. Two patients refused to participate in the study. All patients met the qualifications for surgery at the tertiary referral hospital. The Ethics Committee approved this study and informed consent was obtained from all patients or their caregiver.

Patients that were unable to give informed consent and those that had peritoneal carcinomatosis were excluded.

2.2. Screening Tests and Geriatric Assessment

Prior to surgery, eight tests that screened for frailty (VES-13, TRST, G8, GFI, aCGA, Rockwood, Balducci, and the Fried) were carried out. A glossary for the different screening tests used in this study is shown in Table 1. All patients had also a GA, used as the reference to compare all other tests. The GA included validated sections such as: activities of daily living (ADL),[12] instrumental activities of daily living (IADL),[13] the Blessed Orientation-Memory-Concentration (BOMC) Test,[14] the Clock Drawing Test (CDT-test),[15] Charlson Comorbidity Scale,[16] Geriatric Depression Scale,[17] Timed Up and Go (TUG),[18] as well as a full nutritional assessment (MNA).[19] The results and scores of each section were recorded. In addition, each test was scored on a dichotomous scale, based on whether there was or was not impairment in any of the parameters. Trained persons on the geriatric team administered all surveys 1–5 days before surgery. Based on prior published literature, the detection of deficits in two or more GA domains indicated an increased risk of disability or death[20]; this was used as the

Table 2 – Glossary of the tests used in the geriatric assessment.

Test		Number of items	Range	Cut-off score [a]
ADL[12]	Functional status	6	0–6	<5
IADL[13]	Functional status	8	0–8	≤7
TUG[18]	Physical activity	1	0–∞	≥15
Charlson Comorbidity Scale[16]	Comorbidity	19	0–37	>3
Geriatric Depression Scale[17]	Depression	15	0–15	>5
BOMC Test[14]	Cognitive assessment	6	0–28	>10
CDT-test[15]	Cognitive assessment	7	0–7	>3
MNA full[16]	Nutritional assessment	18	0–30	<24

[a] Cut-off score indicating impairment in the domain.