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Oncogeriatrics (part 7.)
Geriatric assessment for older patients with cancer

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The geriatric assessment (GA) is defined as a multidimensional, interdisciplinary diagnostic process focusing on determining an older person's medical, psychosocial, and functional capabilities that are not identified by routine evaluation. There is more and more data on the benefits of the GA in the evaluation and management process of older patients with cancer. It allows for the development of an individual cancer treatment plan resulting in less postoperative complications, reduced treatment toxicity, improved quality of life and very often without compromising survival. However, the relationship between specific domains of the GA and post-treatment medical outcomes, functional status and quality of life remains unknown. Moreover, there is still no consensus over what the "golden standard" GA should look like, which tools should be included and what cut-off should be used. This is still an active area of research. However, there is no doubt that understanding the health status of an older patient with cancer should be as important as cancer staging and tumour biology.

Key words: older patients, elderly, comprehensive geriatric assessment, frailty

As has been mentioned in the previous articles, older adults are a heterogeneous group having varying degrees of comorbidities, functional reserves, cognitive impairments and social support [1]. Therefore, chronological age alone and the routine format of medical history, physical examination, biochemistry and imaging tests often do not provide adequate information needed for optimal and tailored treatment. Many older adults have unidentified, uncommunicated, and therefore unaddressed aging-related conditions that are associated with morbidity and early mortality [2]. To help guide treatment decisions the geriatric assessment (GA) was introduced, a milestone in the field of geriatrics. Moreover, at present, cancer treatment for older patients is very often planned based on extrapolations of evidence derived from clinical trials in which younger patients or fit older patients enrolled [3].

The GA is defined as a multidimensional, interdisciplinary diagnostic process focusing on determining an older person's medical, psychosocial, and functional capabilities. In turn, the term comprehensive geriatric assessment (CGA) refers to a GA which also includes a plan for the further management of identified problems. Therefore, the main goal of the CGA in older cancer patients is to provide a comprehensive health appraisal to guide targeted interventions and appropriate cancer treatment selection [4].

The GA was initially developed and validated in the general older population for detecting vulnerability and aging-related issues that were associated with mortality [5]. However, numerous studies, though not all, have proved its usefulness equally in cancer patients:

- The GA allows the determination of a baseline health status, monitoring of changes and a diagnostic of the frailty status, which is an exponent of biological old age;
- The GA can identify age-related areas of vulnerability that can be missed in routine clinical evaluation in up to 50% of patients [6]. These impairments concern physical functioning and nutritional status, but also very often geriatric

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syndromes such as: dementia, delirium, depression, incontinence, sarcopenia, osteoporosis/spontaneous fractures which are independent risk factors of worse outcome [6]. Routinely used oncological tools like the Eastern Cooperative Oncology Group (ECOG) or the Karnofsky performance status have been shown to poorly reflect functional impairment in older patients with cancer. In patients with an ECOG score <2 almost 40% of patients were dependent on some form of instrumental activities for daily living [7];

- Performing the GA can change treatment decisions for up to 50% of older patients [8, 9]. In these studies, in the case of up to 28% of patients, the treatment was intensified and in case of up to 37%, the treatment intensity was reduced [10, 11];
- The GA can identify areas for further rehabilitative actions such as: review of diet and nutrition, physical performance, psychological support, medication review and social support. In some studies, applying the GA reduced the number of treatment related complications. Other studies have not confirmed this, but in case of high-risk patients its use allowed the completion of the cancer treatment with fewer treatment modifications [12];
- The GA can predict survival of and adverse events during cancer treatment. Thus, it may assist clinical decision-making.
- The GA can improve patient physician communication about aging-related concerns and their influence on the treatment outcome [13]. A practical and convenient GA summary with recommendations for aging-sensitive interventions improves patient-cantered outcomes and patient satisfaction.

Biological age does not correspond with the chronological age. Therefore, it is difficult to arbitrarily set the level of age at which the GA should be implemented. Most of the guidelines recommend it at the age of 70 years. However, in our opinion, the age should be set at the level of 65 years in Polish society. It also should be performed in younger patients identified in screening tests [14].

The GA consists of several domains evaluating: functional status, mobility/falls, cognitive level, mood, comorbidity, polypharmacy, fatigue and social support. At present, there are several well-validated tools available. Table I presents an overview of the different tests with literature-based cut-offs that may be used in the GA process. There has been no consensus about which tools should be included in the GA and until now there have been no studies showing the superiority of one specific tool over another. Therefore, the choice of score might rely on local preferences, the aim of the tool and present resources.

The number of incorporated GA domains has a great influence on the diagnosis of frailty and on adequate risk assessment as we showed in one previous study. The summary deficit score based on the GA consisting of functional, mobility, cognitive, depression, nutritional, co-morbidity, polypharmacy, and social support questionnaires was the most accurate predictor of post-operative complications in comparison to models with less incorporated domains [33].

In turn, two large prospective studies – Cancer and Aging Research Group (CARG) and Chemiotherapy Risk Assessment Scale for High-Age Patients (CRASH) – identified which parameters of the GA were capable of predicting severe chemotherapy-related complications in a heterogeneous cancer population (tab. II) [33, 34]. Both scores revealed their superiority over the Karnofsky performance status or other classic oncological evaluation tools. They can also help determine the risks and benefits of treatment, promoting shared decision-making. High-risk patients can be monitored closely. A randomized study of GA-directed therapy for older patients with advanced lung cancer demonstrated reduced toxic effects of treatment and less treatment discontinuation in the GA group [35].

In case of radiotherapy the literature is still scarce. Spyropoulou et al. observed higher risk of not completing radiation in the case of impaired score on a VES-13 (screening frailty tool) [36].

There are various models of the GA. It can be performed within a geriatric ward with a specialized geriatric team. Six meta-analyses showed that this model is the most effective method with lower mortality, less institutionalization, and less functional decline compared with a standard ward [37–39]. In the case of the model with a specialized geriatric team that ap-

Table I. Glossary of the most common tools used in the geriatric assessment process

Test		Number of items	Range	Cut-off score
ADL (Katz Activities of Daily Living) [15]	Functional status	6	0–6	<5
IADL (Lawton Instrumental Activities of Daily Living) [16]		8	0–8	≤7
The Duke OARS Assessment of IADL [17]		6	12	<9
Barthel scale [18]		10	0–100	≤60
Self reported number of falls within different time frames		1	0–∞	>2 within last 6 months
TUG (Timed Up and Go) [19]	Physical activity	1	0–∞	≥15
Gait speed [20]		1	0–∞	

Test		Number of items	Range	Cut-off score
Charlson Comorbidity Scale [21]	Comorbidity	19	0–37	≥3
Cumulative Illness Rating Scale (CIRS-G) [22]		13	0–52	>4
Geriatric Depression Scale [23]	Depression	15	0–15	>5
Mini-Mental State Examination [24]	Cognitive function	8	0–30	<24
Montreal Cognitive Assessment [25]		7	0–30	<26
Abbreviated mental test score AMTS (Hodgkinson) [26]		10	0–10	≤6
The Blessed Orientation-Memory-Concentration (BOMC) Test [27]		6	0–28	>10
Clock Drawing Test (CDT-test) [28]		7	0–7	≤4
Mini Nutritional Assessment [29]	Nutritional assessment	6	0–14	<12
MNA full [29]		18	0–30	<24
Number of medications	Toxicity risk	1	0–∞	>4
Brief Fatigue Inventory [30]	Self-perceived fatigue	9	0–90	0–3 no/mild fatigue 4–7 moderate >7 severe
RAND MOS Social Support Scale [31]	Social Support	19	0–5	<4

plies the GA in non-geriatric wards, one meta-analysis could not show significant improvement in the outcome of the patients. However, the main reason for this was the low adherence rate to the geriatric team's recommendations [40]. In turn, joint geriatric and specialized care on the ward is gaining in popularity and showing promising results in more and more studies [41].

In conclusion, all physicians treating older patients with cancer should include some form of geriatric assessment in their clinical practise. Multiple organizations including the International Society of Geriatric Oncology, the National Comprehensive Cancer Network and the European Organization for the Research and Treatment of Cancer recommend the use of the GA prior to the initiation of cancer treatment. However, it is still not routinely performed due to a false belief in its complexity and time consumption. Various forms of the GA allow its incorporation in busy clinical settings. The use of a given tool and cut-off is, in light of current research results, not as important as the incorporation of the following domains: functional status, mobility/falls, cognition function, depression/anxiety, comorbidities, polypharmacy, nutritional status and social support. The more domains included, the more adequate the risk assessment that will be achieved.

Table II. CARG and CRASH score

CARG score (Cancer and Aging Research Group)		CRASH (Chemiotherapy Risk Assessment Scale for High-Age Patients)			
Variable	Score	Variable	Points		
			0	1	2
– Age ≥72 years old	2	**Hematologic score**			
– Cancer type (gastrointestinal or genitourinary)	2	Diastolic BP	≤72	>72	>459
– Chemiotherapy dosing (standard dosing)	2				
– Number of chemiotherapy drugs (polychemitherapy)	2	IADL	26–29	10–25	>0.57
– Hemoglobin (<11 g/dL in males, 10 g/dL in females)					
– Creatinine clearance (<34 mL/min)	3	LDH	0–459		
– Hearing (fair or worse)	3				
– Number of falls in the past 6 months (one or more)	2	Chemotox	0–0.044	0.45–0.57	
– Take medications with some help/ unable	3				
– Walking one block, somewhat limited/ limited a lot	1	**Nonhematologic score**			
– Decreased social activity because of physical/ emotional health problem (limited at least sometimes)	2 1	ECOG PS	0	1–2	3–4
		MMS	30		<30
		MNA	28–30		<28
		Chemotox	0.0.44	0.45–0.57	>0.57

BP – blood pressure, Chemotox – toxicity of the chemotherapy regimen, ECOG PS – Eastern Cooperative Oncology Group performance status, IADL – Instrumental Activities of Daily Living, LDH – lactate dehydrogenase, MMS – Mini Mental Health Status, MNA – Mini Nutritional Assessment

Frailty screening tools (the topic of one of the next articles) are useful. These are simple and quick tools to identify fit older patients who do not require additional assessments or interventions. However, in the case of older patients with cancer, qualified for abdominal surgery, recognised as high-risk surgery, their predictive value, as the only assessment tool, is currently insufficient.

The arguments raised about the time-consuming nature of the GA/CGA are absurd, particularly when one considers the time and resources required to treat complications. Therefore, understanding the health status of an older patient with cancer should be as important as cancer staging and tumour biology.

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