Importance of a comprehensive geriatric assessment in older cancer patients

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Introduction

A multidimensional assessment is a key part of the treatment approach for older patients in a geriatric setting. Comorbidity, functional status, depression, cognitive impairment, nutritional status and insufficient social support have all been demonstrated to affect the survival of elderly and/or cancer patients, with relative risks of death often increased two to four times [1].

A more effective evaluation of the clinical importance of comorbid conditions and functional limitations in patients over 70 years is provided by the Comprehensive Geriatric Assessment (CGA). Broad agreement exists on the areas that should be tested in a CGA (Table 1), though the format of CGA is not standardised [2]. CGA investigates all the controversial areas which account for the heterogeneity of the older population. CGA is based on standardised interviews, evaluation of comorbidity, and a series of validates scales such as Katz's Activities of Daily Living (ADL) [3], Lawton's Instrumental Activities of Daily Living (IADL) [4], geriatric depression scale (GDS) [5], Folstein Mini Mental Status (MMS) [6] and nutritional assessment. CGA differs from the standard medical evaluation because it is focused on the functional status and quality of life of elderly patients, and it takes advantage of an interdisciplinary team.

The functional status of the older person relates to the likelihood of survival. The assessment of Performance Status (PS) according to Karnofsky or the Eastern Co-operative Oncology Group (ECOG) scale [7] has limited utility in the elderly cancer population [8]. ADLs and IADLs are the most sensitive assessments of disabilities in older individuals. ADLs are the skills necessary for basic living and include feeding, grooming, transferring and toiletting [3]. IADLs include shopping, managing finances, housekeeping, laundry, meal preparation, handy ability to use transportation and telephone and ability to take medications, then the IADLs are those skills a person needs to live independently [4].

CGA is routinely employed in geriatric clinics and nursing homes, but is not yet widely used by oncologists, even though in patients treated for neoplasia, the capability of moving to get to the cancer centre, of reaching the responsible physician or nurse by phone in case of complications, and to take the prescribed drugs at home is very important [9]. CGA allows the collection of homogeneous information among different Centres and a better estimation of life expectancy and might allow a better management and a more efficient care of elderly patients with cancer.

In 1996, a CGA scale was developed and validated for the first time in an oncology setting by Monfardini and colleagues [9]. A clinical research

Table 1
Areas of assessment and the related instrument for the Comprehensive Geriatric Assessment

Domain	Instrument
Demographic	Age, sex
Health	No. of comorbid conditions (Satariano's index) Comorbidity indices: Charlson's, CIRS-G
Function	Performance Status, ADL, IADL
Cognition	Folstein Mini Mental Status (MMS)
Emotions	Geriatric Depression Scale (GDS)
Nutrition	Serum albumin, triceps skinfold, transferrin
Social and economic	Living conditions, effective caregiver, income, marital adjustment, Access to transportation

CIRS-G: Cumulative Illness Rating Scale-Geriatric. ADL: Activities of Daily Living. IADL: Instrumental Activities of Daily Living.

tool was generated, aimed at avoiding arbitrary decisions on patient selection and to favour the uniform monitoring of treatment, and allow a better comparison of oncological results. CGA applied to cancer patients gave reproducible and reliable results.

Many of the multiple dimensions included in this instrument were shown to be valid indicators of health-related quality of life in such patients. CGA proved to be applicable in a reasonable amount of time (25–30 minutes) in a medical oncology ward and clinic in which extra time is already required for the usual multidisciplinary approach [9].

From 1995 to 1998, the Italian Group of Geriatric Oncology (GIOGer), has prospectively assessed the efficacy of the same instrument in a large multi-institutional series of elderly cancer patients and elderly non-cancer subjects [10]. The aim of this study was to evaluate if CGA provides useful information to describe elderly cancer patients, to evaluate their prognosis and to estimate the risk of developing treatment-related side-effects. Six hundred and fifty-five subjects aged 65 years and older, were prospectively evaluated: 363 neoplastic patients with disease, and 292 non-cancer patients as controls. Patients with cancer presented a younger median age with respect to non-cancer subjects (72 vs 76 years), a reduced comorbidity burden (43.7% vs 77.1% patients with 3 or more comorbid conditions, according to Satariano's index [11], and a less degree of disability (as measured by ADL and IADL dependence) (13.8% vs 34.6%, and 47.7% vs 61.9%, respectively). By multivariate analysis, elderly cancer patients who were ADL- or IADL-dependent had a nearly 2-fold higher probability of having an elevated Satariano's index, than independent patients. A strong association also emerged between ECOG PS and CGA, with a nearly five-fold increased probability of having a poor PS (i.e. ≥ 2) recorded in patients dependent for ADL or IADL. CGA as proposed by GIOGer, adequately collects homogeneous information on comorbidity and disability, thus allowing the recognition of persons at higher risk for treatment-related complications, making an optimised and individualised cancer management possible [10].

In a different study conducted among elderly patients affected by neoplasia, an ADL index was the strongest independent predictor of mortality [12]. Nonetheless, it should be recognised that controversy remains about whether cancer is an independent determinant of the functional status among older patients. Also, very little is known about the interrelationship between cancer and other comorbid conditions, and it remains unclear how the prognostic significance of a given cancer stage differs depending upon the level of comorbidity and disability [13]. The evaluation of physical function provides critical information in the decision-making process since it may help in estimating the tolerance to treatments. In general, a low IADL index (i.e. high degree of physical impairment) identifies a patient with a high risk of developing complications from anti-neoplastic treatment [8,10,14].

Another experience under way at the Lee Moffit Cancer Center in Tampa, Florida, is the Senior Adult Oncology Program (SAOP) [15]. Preliminary results of this study showed that elderly patients with breast and colon cancer receiving CGA showed a better prognosis expressed in terms of progression-free survival than non-CGA patients. Likewise, CGA contributed to the preservation of functional status in elderly cancer patients.

Comorbidity and CGA as prognostic factors in clinical oncology

Ageing is associated with an increasing prevalence of diseases and disabilities, which are often multiple [15]. In older cancer patients, these comorbidities can have a major influence on survival and can enhance the risk of treatment complications. A reliable assessment of comorbidity is essential to establish the benefits and risks of anti-neoplastic treatments in the elderly population. This allows a reproducible stratification of patient in clinical trials, according to the burden of comorbidity. Since different comorbid conditions may have a different impact on prognosis and clinical outcome, a more effective measurement of comorbidity would allow the recognition of prognostically relevant conditions and establish the benefits and risks rate of treatment in the older patients. Moreover, the prognostic impact of the disease may be different according to its severity (e.g. diabetes). It is often difficult to distinguish comorbidity and disability from cancer and cancer treatment-related effects [16]. Few studies have been published on the importance of independent evaluation of all these variables in the older cancer patients. A few validate scales exist for assessing comorbidity in older cancer patients [1]. The Cumulative Illness Rating Scale-Geriatric (CIRS-G) [17], was compared with the Charlson comorbidity scale [18] in 203 patients who received a CGA during the SAOP [15]. This study demonstrated that comorbidity and functional status (as defined by ADL, IADL and ECOG PS), are poorly correlated in older cancer patients. Because tumour stage does not seem to correlate strongly with functional status, function seems to reflect an inde-

pendent or multifactorial aspect of patient health [1]. Whether comorbidity was defined in a restrictive way (Charlson), or a comprehensive way (CIRS-G), it displayed no correlation with ADL, IADL and ECOG PS. The choice of the scale has important quantitative and qualitative consequences for the measured prevalence of comorbidity in the population studied. In the SAOP, for example, the Charlson scale shows only 36% of patients with comorbidities, while the CIRS-G increases this proportion to 94% [15]. In the GIOGer study, 3 or more comorbid conditions, as measured by the Satariano's index [11] were present in 43.7% of cancer patients, while only 31.8% were found in non-cancer patients. Several groups have shown that the survival of patients with tumours such as breast, colon, prostate and head and neck cancers is significantly modified by comorbidity [1]. Satariano showed that the risk of a breast carcinoma patient dying from their cancer after 65 years, was inversely related to the number of comorbid conditions [11]. These conditions were therefore selected to develop a comorbidity index which appeared to be a strong predictor of 3-year survival. Yancik and colleagues evaluated comorbidity and age in 1610 patients aged 55 years and older with colon carcinoma as predictors of early mortality and concluded that comorbidity affects survival duration [19]. In this study, 28% of patients had died within two years since diagnosis and approximately 30% of patients died due to non-cancer related causes. More than 50% of the total deaths occurred in the stage IV patients group [19].

Comorbidity should be distinguished from functional status and needs to be measured separately in elderly cancer patients [20]. Since different comorbid conditions may have a different impact on prognosis and clinical outcome, a more effective measurement of comorbidity such as Satariano's index, would allow the recognition of prognostically relevant conditions and establish the benefits and risks rate of treatment in the older cancer patients.

Correlation between performance status and ADL–IADL

The assessment of PS according to the classical Karnofsky or ECOG scales has been shown to be an effective predictor of outcome in several oncological studies. However, its application to patients over 70 years of age has limited utility and may underrepresent the degree of functional impairment [21]. The GIOGer study suggests that among elderly cancer patients many aspects of physical limitations are not totally recognised by PS, in particular, those aspects collected through IADL, and that may affect adherence to diagnostic and therapeutic protocols [8,10,21]. Similar results are reported by Exterman: ECOG PS, ADL and IADL, showed a moderate degree of correlation, with a slight advantage for IADL [15]. IADL dependence may also be associated with increased risks of chemotherapy complications [14,22]. Disability of the older person also relates to the likelihood of survival. Detection of dependence is very important because it offers the opportunity of intervention. Although a correlation exists among comorbidity, PS, ADL and IADL, this correlation is not strong enough to be reflected in a single parameter. Therefore, each of these areas should be independently explored.

On the basis of these results, we recommend that both disability and comorbidity be assessed and scored in further studies that involve older cancer patients. For functional status evaluation, ideally, both the ECOG PS and ADL–IADL scales should be scored to ensure comparability with both oncological and geriatric studies. This more accurate evaluation of the global health of elderly patients affected by cancer may assist oncologists in making the most appropriate therapeutic decision for each patient, and may be of the utmost importance in future clinical practice (Fig. 1).

Which oncology patients benefit from CGA?

Fig. 1 summarises the clinical application of CGA in oncology patients. The profile of the frail elderly, according to Winograd et al. [23], is reported in Table 2. They found that such conditions prevented independent living and were associated with a reduced life expectancy. This definition appears the most suitable for the screening of a largely outpatient population of cancer subjects [24]. Clearly, the frail person cannot withstand aggressive anti-neoplastic treatment. In this context, the goal of treatment is supportive therapies (moving beyond the prolongation of survival, 'curing', to 'caring' for patients), and it is important to define what symptoms are to be palliated and what options are available [25] (Fig. 1). According to the clinical definition, the 'frail elderly' is the patient able to maintain homeostasis in a non-stressed condition, but with an increased risk to develop treatment-related toxicities and loss of functional independence. The average life-expectancy of the frail person, even in the absence of cancer, is limited, but not negligible, and it is longer than two years. Although frail persons may die with cancer

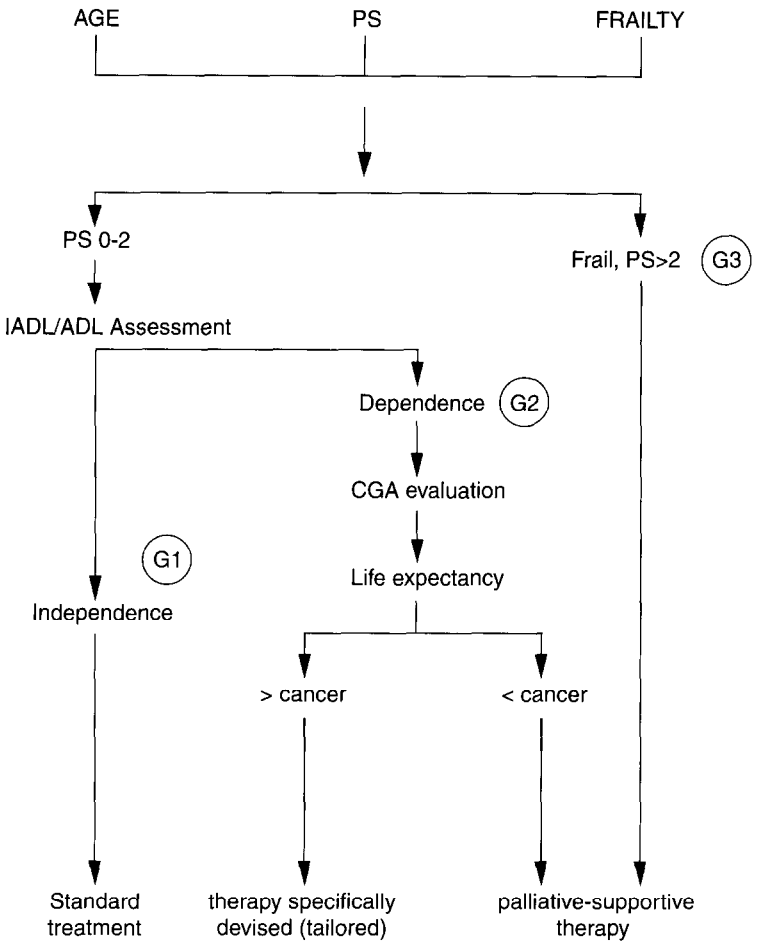

Fig. 1. Algorithm for the management of cancer in patients 70 years of age or more. PS: performance status. ADL: Activities of Daily Living. IADL: Instrumental Activities of Daily Living. CGA: Comprehensive Geriatric Assessment. QoL: Quality of Life.

rather than of their cancer, they are likely to experience severe cancer-related symptoms causing a deterioration in their quality of life [24]. On the practical point of view CGA allows us to distinguish three groups of patients

- Group 1: subjects, PS 0–2, age until 75 years, IADL/ADL independent with no severe comorbidity. These patients are candidates for standard cancer treatments, with only exception of bone marrow transplantation. They might require a more intensive supportive therapy, in order to minimise treatment-related toxicities (i.e. growth factors administered as a prophylactic intent, rather than with therapeutic finality).
- Group 2: subjects IADL/ADL dependent. They should be considered for a specifically tailored anticancer treatment, according to their clinical situation, and life expectancy.
- Group 3: frail subjects, or PS > 2. They are candidates for supportive-palliative treatments, with the aim of improving or maintaining quality of life.

Table 2
Criteria of frailty

Age more than 85 years
Dependence in one or more ADLs
Presence of three or more comorbid conditions
Presence of one or more geriatric syndromes (dementia, delirium, depression, incontinence, falls, osteoporosis, neglect and abuse, failure to thrive)
AUT

ADLs: Activities of Daily Living.

The systematic introduction of CGA into clinical research and daily practice in the oncology setting can help to provide a common language for classifying the physiological age of older patients, and an uniform evaluation in the outcome of the research that can be used as basis to justify and formulate different treatment strategies, or to withhold treatment in specific clinical situations. The CGA may help the management of older individuals with cancer in at

least three important areas: in the assessment of the life expectancy of the patient, the identification of the frail person, and prediction of the tolerance to anti-neoplastic treatment [1,10,22]. Further investigations might help to achieve a wider consensus on the CGA with the aim of optimising and standardising the appraisal of comorbidity and disability in elderly cancer patients.

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