Transdisciplinary Management in Geriatric Oncology

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Take-Home Pearls

- The number of older adults diagnosed with cancer is projected to increase significantly.
- Comprehensive Geriatric Assessment is a valuable instrument in the assessment of the older cancer patient that could help tailor an individualized treatment plan.
- A transdisciplinary team with the knowledge of the principles of geriatrics is essential to provide patient-centered care.
- As cancer is increasingly taking on the characteristics of chronic diseases, there is a huge need to develop shared care models with a bigger role played by the primary care physician.

13.1 Introduction

As a result of declining fertility and mortality rates, the world is experiencing an aging of its population (Fig. 13.1). According to the UN, the proportion of older adults (60 years and older) comprised 11 % of the world population in 2009 but will represent 22 % by 2050. Due to advances in public health and medicine in just the past 100 years, life expectancy for the average person in Europe, North America, Japan, and other industrialized countries has increased by more than 50 %. Adults in these societies can reasonably count on living into their 80s and 90s. As cancer occurs more commonly in the older adults, this shift is expected to markedly increase the number of cancer diagnoses. Cancer is diagnosed at a higher rate

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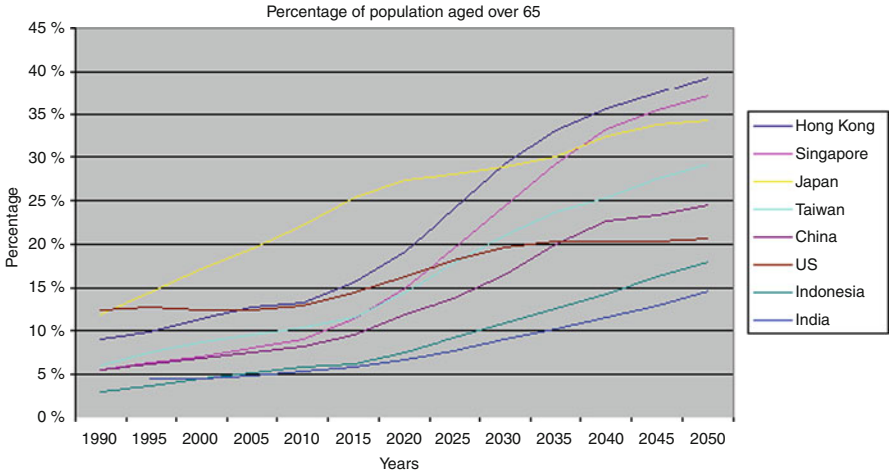

Fig. 13.1 Population projections for the elderly in various countries. Source: US Census Bureau http://www.census.gov/ipc/www/idbnew.html

(53 %), accounts for a higher percentage of survivors (59 %), and results in more deaths among individuals 65 years and older (68 %) compared with younger adults (Hurria et al. 2013). Minorities and older adults represent important population groups that may be particularly vulnerable to suboptimal cancer care, because both groups have been underrepresented in cancer clinical trials (Hutchins et al. 1999) and are also subject to disparities in treatment (Bouchardy et al. 2007; Gross et al. 2008). Colorectal cancer is and will continue to be one of the three leading cancer sites in the year 2030 in both men and women (Smith et al. 2009). Bowel cancer mortality is strongly related to age. In the UK between 2009 and 2011, an average of 57 % of bowel cancer deaths occurred in men and women aged 75 years and over (2014).

In older adults, cancer is often only one of multiple coexisting health conditions. Physical, cognitive, emotional, and social issues add to the complexity of their care needs (Hurria et al. 2013). Older patients often see several providers, a diverse and fragmented group of clinicians with poor communication among them. Older adults are also the biggest consumers of prescription medications, over-the-counter drugs, and nutritional supplements. Nearly one third of community-dwelling adults aged 65 or older take more than five prescription medications (Tinetti et al. 2004). In addition, most hands-on care is provided by family and friends who, despite very little training, play a key role in the health-care infrastructure of the older adult (Hurria et al. 2013).

Just about every aspect of organized medicine follows a disease-by-disease model. This is traditionally how medicine is taught, research is funded, professional societies are formed, journals are published, and medical products are developed. This approach treats the diseases of aging as if they exist in silos, unconnected from one another (Perry 2010). For cancer treatment in older adults to be feasible and successful, there must be effective communication and coordination among multiple providers including not only the oncologist, surgeon, and/or radiation oncologist

but also the patient's primary care physician and specialty physicians. A transdisciplinary team with the knowledge of the principles of geriatrics to support the older adults coping with cancer is essential to provide seamless patient-centered care. In a transdisciplinary model, the members of the care team come together from the beginning, exchange ideas, work together, and come up with solutions (Satterfield et al. 2009). Team care improves health care, quality of life, and functional status in older patients while enhancing patient and family understanding of disease and treatment options (Boult et al. 2009).

13.2 Geriatric Assessment

There is a significant heterogeneity among older cancer patients in terms of functional status, comorbidities, physiological reserve, availability of social support, and preference and desire for therapy which will influence patient's ability to tolerate aggressive cancer treatment. An important tool used for the assessment of older cancer patients is the Comprehensive Geriatric Assessment (CGA) designed to identify multiple problems of geriatric patients in order to develop interventions.

13.2.1 What Is CGA?

CGA is a validated holistic approach to evaluate the elderly population. It is a multidisciplinary, multidimensional, and intensive evaluation of a patient who is at significant risk for subsequent functional decline (Reuben et al. 1999). CGA measures aspects such as functional status, comorbid medical conditions, nutritional status, physiological state, social support, and geriatric syndromes involving multidisciplinary interpretation as well as transdisciplinary implementation. Such comprehensive approach reveals information missed by routine history and physical alone (Hurria et al. 2006). Evidence for the value of integrating geriatric evaluation principles into oncology is increasingly being documented in the literature (Extermann et al. 2005).

13.2.2 Role of Geriatric Assessment in Oncology

Evaluation for oncologic treatment consideration routinely includes cancer pathology, staging of the disease, basic functional assessment, functional assessment of several organs, and consideration of comorbid illness. In older cancer patients, this may not be sufficient to predict potentially adverse outcomes such as toxicity, morbidity, disability, and mortality and to properly support clinical decisions. Objectives of performing geriatric assessment in cancer patients are to provide an approximate estimation of life expectancy, help the oncologist understand the potential impact of the patient's cancer during his or her remaining life, identify cancer patients for whom one could expect the greatest benefit from treatment, identify medical and social problems that may decrease the tolerance of cancer

treatment and/or be amenable to intervention, formulate appropriate treatment and management strategies, and assist in monitoring clinical and functional outcomes going forward (Hurria and Balducci 2009). A prospective observational cohort study looking at CGA as a predictor of complications in elderly patients after elective surgery for colorectal cancer showed that CGA was able to identify frail patients who have significantly increased risk of severe complications after elective surgery (Kristjansson et al. 2010).

The ultimate goal of CGA is to provide the patient with a holistic view of what to expect in going through cancer treatment and have the patient participate in shared decision-making process of selecting the best treatment option in accordance with the patient's wishes. A recent review on geriatric assessment in the oncology setting showed that it is feasible, and some domains were significantly associated with adverse outcomes. However, they found limited evidence that geriatric assessment impacted treatment decision-making (Puts et al. 2012).

13.2.3 Prediction of Chemotherapy Toxicity

Existing oncology performance status measures (such as Karnofsky performance status [KPS] (Yates et al. 1980) or Eastern Cooperative Oncology Group performance status (Oken et al. 1982)) are applied to adult patients with cancer regardless of age to estimate functional status, assess eligibility for clinical trials, and predict treatment toxicity and survival. However, these tools were validated in younger patients and do not address the heterogeneity in the aging process. There is a need to develop a predictive model that incorporates geriatric and oncologic correlates of vulnerability to chemotherapy toxicity in older adults. The Cancer and Aging Research Group (CARG) study using a pre-chemotherapy geriatric assessment was able to identify risk factors for chemotherapy toxicity in older adults and develop a risk stratification schema. A predictive model for grade 3–5 toxicity was developed. It consisted of geriatric assessment variables, laboratory test values, and patient, tumor, and treatment characteristics. This model had a greater ability to discriminate risk of chemotherapy toxicity than the KPS (Hurria et al. 2011).

The Chemotherapy Risk Assessment Scale for High-Age Patients (CRASH) score is another predictive instrument of chemotoxicity in older adults. Through the assessment of 24 parameters, this study was able to stratify patients into four categories for risk of chemotherapy-related toxicity. The study confirmed that hematological and non-hematological toxicities are associated with different predictors, which may prove important for clinical application and for designing future trials (Extermann et al. 2012).

13.2.4 Preoperative Evaluation of the Older Cancer Patient

The determination of surgical risk for the elderly patient is complex. For these patients, traditional organ system-oriented preoperative assessment has been shown

to be lacking in predicting adverse postoperative outcomes. The assessment should encompass multiple domains including underlying functional status, physiologic changes of normal aging, changes related to comorbidities, and the surgical procedure itself. There have been several studies showing that geriatric assessment incorporated into preoperative assessment provides a more accurate picture of what to expect in terms of perioperative morbidity and mortality. In 1991, the Physiological and Operative Severity Score for the enUmeration of Mortality and morbidity (POSSUM) was developed, and since then it has been used in assessing the risk of colorectal surgery (Copeland et al. 1991). By using a validated frailty scoring system which encompasses weight loss, exhaustion, physical activity, walk time, and grip strength, Makary et al. were able to show that frailty independently predicted postoperative complications, length of stay, and discharge to a skilled or assisted living facility in older surgical patients (Makary et al. 2010). Robinson et al. showed that preoperative impaired cognition, low albumin level, history of falls, low hematocrit level, any functional dependency, and a high burden of comorbidities were closely related to 6 months' mortality and postdischarge institutionalization in patients undergoing major thoracic and abdominal operations (Robinson et al. 2009). In the Preoperative Assessment of Cancer in the Elderly (PACE) study, functional dependency, fatigue, and abnormal performance status were associated with a 50 % increase in the relative risk of postoperative complications (Audisio et al. 2008). In patients >65 years of age, lower Mini-mental State Examination score and older age were significantly associated with the development of post-cystectomy delirium, and those who developed delirium were more likely to face readmission and reoperation (Large et al. 2013). In patients undergoing pancreaticoduodenectomy, older age and worse scores *in geriatric assessment* predicted major complications, longer hospital stays, and surgical ICU admissions (Dale et al. 2014).

A validated and brief preoperative evaluation tool that recognizes the unique physiologic vulnerabilities of the geriatric population and accurately predicts outcomes is greatly needed. The Memorial Sloan Kettering Cancer Center (MSKCC) Geriatric Service has incorporated selected elements of the geriatric assessment into its daily clinical practice (Annals of Surgery, accepted for publication). Preoperative assessments are performed by a team that includes a nurse, pharmacist, and geriatrician. Patients are referred to a nutritionist, physical therapist, social worker, and other medical disciplines if needed. The patients have the chance to discuss age-specific concerns and potential geriatric syndromes which may complicate postoperative outcomes.

13.3 Models of Care with Multidisciplinary Teams

Cancer care is undergoing a shift from a disease-focused management to a patient-centered approach in which increasingly more attention is paid to psychosocial aspects, quality of life, patients' rights and empowerment, and survivorship (Borras et al. 2014). Multidisciplinary care is essential to provide for the needs of patients with multiple comorbidities as well as unique social and emotional issues. Support

for caregivers of older adults with cancer is also necessary. There is evidence that multidisciplinary care has the potential to significantly increase survival (Junor et al. 1994). The decision-making process by a care team is able to greatly reduce the wide variations in decisions made by professionals acting independently by ensuring that the decisions are consistent with available evidence. In a US study, the initial treatment recommendation for women with breast cancer was changed following a second opinion of a multidisciplinary panel in 43 % of the cases (Chang et al. 2001).

In geriatric oncology, integrated care comprises two broad categories: coordinated health-care delivery and community primary care with support services (Tremblay et al. 2012). *Coordinated health-care delivery* refers to the patterns of interaction between health-care professionals within a multidisciplinary team in order to successfully meet the needs of patients and ensure that health and social services are delivered in tandem and according to a patient's specific needs. Multidisciplinary teamwork is considered the core mechanism to improve both collaboration and care coordination. *Community primary care with support services* includes but is not limited to care delivery through the primary care physician (PCP). Access to social services, mental health services, transportation, and home care services helps limit unnecessary patient hospitalizations.

Teamwork ensures patient-centered care and patients' active role in their own care plan. Delivering an integrated cancer care system requires developing efficient networks between hospitals, primary health-care facilities, human and social services, and the communities. Attention often is focused mainly on the relationship between oncologists and geriatricians and less so on other professionals. This reinforces professional silos and reflects a lack of recognition and understanding of the key positions played by some professionals in accompanying patients on their cancer care pathway (Tremblay et al. 2012). The three most frequently reported needs faced by older adult patients at a cancer center in Pennsylvania during a pilot project to set up a geriatric oncology program were emotional support, caregiver support, and transportation issues (Lynch et al. 2007).

Optimal decision-making in the diagnosis, treatment, and support of cancer patients is being increasingly associated with multidisciplinary teams. Specialized geriatric oncology clinics with multidisciplinary teams, geriatric assessment tools, and other elements tailored to the needs of the older cancer patient have been established in many US cancer centers (McNeil and Caroline 2013). However, the organization and roles they play within their parent institution vary widely. Cancer centers are still exploring several formats. Some serve as the patients' primary base, offering assessment, treatment, and supportive services. Others offer comprehensive care after assessment by the center's geriatric division. Yet others focus primarily on assessment, a critical first step in all geriatric oncology programs, after which they return to their PCP or oncologist for therapy. Some cancer centers offer multidisciplinary clinics where cancer patients can see specialists from various disciplines in one location. Others bring different specialists together to discuss patients' care in a multidisciplinary team meeting. The degree of organization and the type of communication in these meetings have a direct impact on the quality of patient care.

The primary goal of such meetings is to improve the care management for individual patients. One multidisciplinary discussion with all involved specialties is more effective, and the joint decision more accurate than the sum of all individual opinions (Ruhstaller et al. 2006). The team should in general comprise a surgeon, radiotherapist, medical oncologist, and the PCP/geriatrician along with the clinical trial coordinator, a member of the palliative care team, and a specialist nurse. It may include a GNP, primary care nurse, pharmacist, dietician, and social worker depending on the setting (Lynch et al. 2007). The team meeting should maintain an environment that allows all ideas about the patient to be openly discussed. Such a setting is also an ideal learning opportunity for junior doctors and other professionals (Ruhstaller et al. 2006).

13.4 Shared Care Between Specialty Care and Primary Care

The role of the PCP in cancer care has mostly been focused on cancer prevention and screening. Typically they have had the task of identifying and referring patients to specialists in a timely manner, but have stayed on the periphery of cancer care until patients reach the palliative stage. Older patients are likely to have multiple chronic medical conditions and long-term relationships with their PCPs, often see multiple specialists, and take multiple medications. The importance of fluid, accurate, and timely communication among all involved should be top priority in order to avoid fragmentation of care and unintended complications. In addition, the role of the PCP in addressing aging-related issues when caring for older adults in long-term survivorship has not been comprehensively described, and effective collaboration models have not been established.

Shared care across the primary-specialty interface has been defined as the joint participation of PCPs and specialty care physicians in the planned delivery of care, informed by an enhanced information exchange in addition to routine discharge and referral notices (Smith et al. 2007). Within shared care, geriatric oncologists, medical oncologists, PCPs, and other members of the team can bring their own expertise to provide seamless patient-centered care. Shared care is thought to be most important at transition points (e.g., initial diagnosis and staging, recurrence, initiation of and completion of active cancer treatments). It is also important in advanced cancer, as goals shift from more active to palliative treatments and end-of-life care. Communication and coordination could result in improved quality of care in symptom management, decision-making, addressing family burden, and bereavement (Rose et al. 2009).

Existing literature supports the benefit of shared care in the management of chronic diseases such as diabetes mellitus (Smith et al. 2004) and heart failure (McAlister et al. 2004). Cancer has taken on the characteristics of these chronic illnesses with an increasing number of patients with prolonged periods of survival after cancer diagnosis and many dying with their illnesses rather than of it. The PCP is well placed to take on a leading role in improving services for people living with cancer, providing follow-up that addresses patient priorities, and developing more

personalized care for cancer survivors. This involves setting up individualized survivorship care plans for the patients (Weller 2008). Dr. Harvey Cohen developed a model for shared care of elderly patients with cancer (Cohen 2009). It proposes a sharing of the patient's care between the oncologist and the PCP. The oncologist takes on a greater role during the initial treatment phase and subsequently if relapses occur. The PCP assumes a greater role during remissions and in survivorship. Throughout the process, palliative care should be part of the team. There may arise more need for palliative care expertise if, at some point, a decision is reached to discontinue cancer-specific treatment and to concentrate on symptom management and comfort. A study of elderly breast cancer survivors revealed that those who continued to see their oncologists were more likely to receive appropriate follow-up mammography for their cancer but those who were monitored by PCPs were more likely to receive all other non-cancer-related preventive services such as influenza vaccine, lipid testing, bone densitometry, and colon and cervical screening. Those who saw both types of practitioners received more of both types of services (Earle 2003).

There are limited data on the feasibility and cost-effectiveness of shared care in oncology and associated improved outcomes. There are several potential barriers to shared care on each side of the primary-oncology interface. Some of these barriers are a lack of certainty over roles and responsibilities, a paucity of formal training in oncology for PCPs that may result in a reluctance to participate actively in the care of oncology patients, and a lack of understanding of the culture of primary care on the part of the oncologists (Owusu and Studenski 2009). A challenge for primary care is to recognize its unrealized potential for promoting survivorship and to develop new models of care that allow it to do so. The general concept here is that care of older patients with cancer may be shared across disciplines over the entire temporal course of the disease, with differing levels of involvement of the particular discipline, depending upon the patient and disease status at any given time. With a transdisciplinary approach, the burden of dealing with the complexities of care for the older cancer patient can thus be eased for the patient, the family, and the professional care provider (Cohen 2009).

13.5 Summary

The care of older adults with cancer is complex. A transdisciplinary approach by a team with the knowledge of the principles of geriatrics is essential to provide seamless patient-centered care. Geriatric assessment is an important tool to identify geriatric syndromes, helping the oncologist and the patient with a holistic view of what to expect in going through cancer treatment. How to provide optimum comprehensive care for older adults with cancer is still being explored. There are multiple models of multidisciplinary and shared care that need further evaluation. However, it is clear that multidisciplinary and/or shared care is essential to provide for the needs of these patients with multiple comorbidities as well as unique social and emotional issues.

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