Cancer in old population: We need more practice

The world’s population is rapidly aging, and health problems of the elderly are a major focus of the medical system. According to the latest epidemiological report, cancer has surpassed heart disease as the leading cause of death for people over 60 years old. In 2018, a total of 498,963 people over 60 years old died of cancer in the United States. It is estimated that by 2030, 70% of cancers and 85% of cancer-related deaths will occur in the elderly over 65 years old. The elderly population will undoubtedly comprise a major part of cancer cases in the future. Previous research has revealed the intimate association between aging and cancer. The development of cancer is a time-dependent process with increased incidence in later phases of life. Environmental carcinogens are more likely to impact older tissues and carcinogenesis is also promoted by the aging-related changes in body environments like chronic inflammation and immunosenescence. These factors contribute to the increased incidence of cancers with age. Currently, more than 50% of newly diagnosed cancer patients are over 60 years old and about one-third older than 70 years. Take lung cancer and pancreatic cancer for example—the incidence of lung cancer is only 0.7% in patients younger than 60 years old, while the incidence is up to 14.3% in those over 60 years old. Among newly diagnosed pancreatic cancer patients, only 13% of all pancreatic cancer cases were diagnosed below the age of 60.

In clinical practice, surgery and chemotherapy still remain the primary options for most cancers, and a comprehensive assessment for physical condition is required before decision making to determine whether the patient is sufficiently tolerant of treatment. The treatment strategies for elderly cancer patients are less aggressive based on various considerations, medical and socioeconomic, thereby leading to detrimental effects on life expectancy for these patients. Although elderly patients often present with additional chronic diseases (e.g., heart diseases, chronic lower respiratory diseases, and cerebrovascular diseases), and decline of multiple organ functions, aging is still a highly individualized process that cannot be evaluated merely by chronological age. Comprehensive geriatric assessment (CGA) is a concept proposed in geriatric oncology to serve as a multidimensional tool for integrating therapeutic decision making in older adults based on their biological age. Prior studies have confirmed the capability of CGA to predict the risk of morbidity and mortality among elderly cancer patients, suggesting that evaluation systems of high sensitivity and specificity for treatment strategies of old patients with cancer are clearly needed.

Anesthesia and surgery are both challenging for older patients requiring tumor resections. Many elderly patients are not suitable for surgical interventions because of advancing ages. For example, it was reported that only 7% patients >85 years with pancreatic cancer are eligible for surgery compared with 40% in the 66–70 years age group. The American Society of Anesthesiologists (ASA) grades for elderly adults are typically higher than grade III, representing a higher probability of serious complications during anesthesia. Moreover, elderly patients are more likely to suffer from complications such as delayed recovery, extubation failure, and postoperative delirium due to the slow metabolism of anesthetics. Intensive care related to not only surgery-related complications but also other systemic diseases are equally necessary for elderly patients’ postoperative treatment, noting that the number of patients requiring continuous inpatient nursing care at the time of discharge increases with age. Multidisciplinary treatment (MDT) has been applied in various cancers in recent years and to a large extent has improved prognosis. Nonetheless, perioperative management with safety and efficiency tailored for elderly patients still requires constant exploration and updating, expanding on the MDT approach.

Systemic therapy is another major treatment for elderly cancer patients in addition to surgery. As mentioned above, elderly patients often require more time to recover well enough to allow for adjuvant therapy. However, the delay in initiation of adjuvant treatment increases the risk of recurrence. Though data from previous studies suggested survival benefits for elderly patients from adjuvant therapy such as chemotherapy and radiotherapy, fewer elderly patients received adjuvant therapy compared to younger...
patients, and were recommended for adapted dose or second-line treatment if available given concerns with adverse effects. The increased application of targeted therapy and immunotherapy has greatly expanded options for elderly patients given that these therapies are better tolerated. It should be emphasized that there is insufficient evidence-based medical guidelines for drug-based therapeutic approaches for older patients since they are underrepresented in most phase III randomized trials, thus, making the selection of combined treatment more tenuous. Previous research noted distinctive patterns in gene mutation and tumor metabolism for elderly patients; for instance, older patients with pancreatic cancer present more diploid tumors or TP53 mutations. Further explorations focus on these aging patterns of cancer might help development of new anti-tumor drugs suit for elderly patients.

In summary, it is crucial to find an appropriate balance of potential treatment benefits and adverse effects in the elderly population with cancers, with a need to improve the management of these patients. This field is exactly what our journal, Aging AND Cancer, will focus on. We welcome reports with novel and cutting-edge ideas and approaches, from basic to clinical research, so as to better understand and address the challenges related to the intimate associations between aging and cancer.

CONFLICT OF INTEREST
The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS
Siyi Zou: Writing-original draft and writing-review and editing. Baiyong Shen: Writing-original draft and writing-review and editing.

Siyi Zou1
Baiyong Shen1,2,3

1 Department of General Surgery, Pancreatic Disease Center, Ruijin Hospital Affiliated to Shanghai Jiaotong University School of Medicine, Shanghai, China

2 Research Institute of Pancreatic Disease, Shanghai Jiao Tong University School of Medicine, Shanghai, China

3 State Key Laboratory of Oncogenes and Related Genes, Shanghai, China

Correspondence
Baiyong Shen, Department of Pancreatic Surgery, Ruijin Hospital, School of Medicine, Shanghai Jiao Tong University, No.197, Rui Jin Er Road, Shanghai 200025, China.
Email: shenby@shsmu.edu.cn

ORCID
Baiyong Shen https://orcid.org/0000-0002-3994-248X

REFERENCES
1. Yancik R, Ries LA. Cancer in older persons: an international issue in an aging world. Semin Oncol. 2004;31(2):128-136.
2. Lasry A, Ben-Neriah Y. Senescence-associated inflammatory responses: aging and cancer perspectives. Trends Immunol. 2015;36(4):217-228.
3. Grimes A, Chandra SB. Significance of cellular senescence in aging and cancer. Cancer Res Treat. 2009;41(4):187-195.
4. Siegel RL, Miller KD, Fuchs HE, Jemal A. Cancer statistics, 2021. CA: Cancer J Clin. 2021;71(1):7-33.
5. Higuera O, Ghanem I, Nasimi R, Prieto I, Koren L, Feliu J. Management of pancreatic cancer in the elderly. World J Gastroenterol. 2016;22(2):764-775.
6. Giri S, Al-Obaidi M, Weaver A, et al. Association between chronologic age and geriatric assessment-identified impairments: findings from the CARE registry. J Natl Compr Canc Netw. 2021:1-6.
7. Extermann M, Aapro M, Bernabei R, et al. Use of comprehensive geriatric assessment in older cancer patients: recommendations from the task force on CGA of the International Society of Geriatric Oncology (SIOG). Crit Rev Oncol Hematol. 2005;55(3):241-252.
8. Meguid RA, Ahuja N, Chang DC. What constitutes a “high-volume” hospital for pancreatic resection?. J Am Coll Surg. 2008;206(4):622 e621-629.
9. Finlayson E, Fan Z, Birkmeyer JD. Outcomes in octogenarians undergoing high-risk cancer operation: a national study. J Am Coll Surg. 2007;205(6):729-734.
10. Macchini M, Chiariavalli M, Zanon S, et al. Chemotherapy in elderly patients with pancreatic cancer: efficacy, feasibility and future perspectives. Cancer Treat Rev. 2019;72:1-6.