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## Geriatric Oncology Research at the 2019 American Geriatrics Society (AGS) Annual Meeting: Joint Perspectives from the Young International Society of Geriatric Oncology (SIOG) and AGS Cancer and Aging Special Interest Group

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### Introduction

The 2019 American Geriatrics Society (AGS) Annual Meeting was held on May 2–4 in Portland, Oregon and brought together a diverse group of researchers, clinicians, and policy

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Author Contribution

All authors: Study conception and design; data acquisition; analysis and interpretation of data; manuscript preparation, editing, and review of the final article

Conflicts of Interest:

MLW reported a conflict of interest outside of the submitted work (immediate family member is an employee of Genentech with stock ownership). CJP is a paid member of the clinical advisory board for Potentia Metrics. The remaining authors have no conflicts to report.

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experts in aging. After a manual review of all presented abstracts, we identified 27 abstracts on cancer and aging and summarized their main findings within six themes to highlight geriatric oncology research.

## Impact of Cancer Treatment on Cancer Outcomes

Identification of older adults at high risk for poor cancer outcomes remains an active area of research, especially among patients receiving novel therapies. Immunotherapy in older adults was the focus of an AGS clinical practice symposium including communication with patients and families about what to expect, recognition and management of immune-related adverse events (irAEs), and survivorship needs. Two retrospective studies examined AEs among older adults with non-small cell lung cancer (NSCLC) in real-world settings. In a study of 18 patients age 75, Yerigeri et al. found that the rate of severe AEs was high (56%).<sup>1</sup> Johns et al. presented data on 238 patients age 70 receiving immunotherapy among which 39% experienced any grade irAE and 13% experienced grade 3 irAE.<sup>2</sup> This is similar to rates of 37–60% of irAEs found in a recent review of immunotherapy in older adults.<sup>3</sup> Depression and decreased mobility at the time of immunotherapy initiation were significantly associated with any grade and grade 3 irAE, respectively, highlighting components of the geriatric assessment that may predict risk of toxicity beyond traditional performance status assessments.<sup>2</sup>

Management of treatment toxicities is a critical yet challenging component of care for older adults with cancer, and oncologists often worry that dose reductions or delays may impact efficacy. Dummer et al. showed that dose reductions and delays to manage AEs from sonidegib, a hedgehog inhibitor, in older adults with advanced basal cell carcinoma treated in the BOLT trial (NCT01327053) did not negatively affect overall response rate.<sup>4</sup> In addition, Pollock et al. described the feasibility of a multidisciplinary team-based approach to managing androgen deprivation therapy AEs among men with prostate cancer.<sup>5</sup>

Two studies assessed whether geriatric assessments predict cancer-related outcomes. Among adults age 75 years receiving adjuvant chemotherapy after surgery for a solid tumor, Keegan et al. found that preoperative Sinai Abbreviated Geriatric Evaluation scores<sup>6</sup> were not associated with grade 3–4 AEs or treatment completion.<sup>7</sup> In contrast, in a study of 148 adults age 50 years who underwent allogeneic hematopoietic cell transplantation (HCT), Huang et al. found that pre-transplant Instrumental Activities of Daily Living (IADL) impairment was associated with inferior progression-free survival and overall survival (OS) while worse physical function as measured by the Medical Outcomes Study Physical Health scale<sup>8</sup> was associated with inferior OS and longer length of stay.<sup>9</sup>

## The Relationship of Cancer and Cancer Treatments to Geriatric Outcomes

Moving beyond traditional oncology outcomes, several studies examined geriatric outcomes associated with cancer and cancer treatments in older adults with various cancer types. Among 62 adults age 65 years with advanced NSCLC starting a new systemic therapy, Metzger et al. found that 62% of patients experienced a decline in life-space mobility<sup>10</sup> at one month.<sup>11</sup> Life-space mobility is a patient-reported measure of where, how frequently,

and how independently a person goes in the past four weeks within the home and beyond in one's town or geographic region.<sup>10,12</sup> Decline in life-space mobility was associated with lower pre-treatment Karnofsky Performance Status,<sup>13</sup> ADL dependence, abnormal Montreal Cognitive Assessment, lower quality of life,<sup>14</sup> and higher morning fatigue.<sup>11,15</sup> At two months, 57% maintained or recovered to their pre-treatment life-space and were more likely to have received non-chemotherapy treatment.<sup>11</sup> As presented by Gilmore et al., older adults with advanced colorectal cancer receiving chemotherapy were more likely to report ADL and IADL impairments during treatment if they had abnormal Short Physical Performance Battery scores<sup>16,17</sup> at baseline.<sup>18</sup> Among 20 women with hormone receptor positive, HER2 negative stage II or III breast cancer, Chang et al. detected a significant decrease in grip strength and submaximal graded exercise treadmill testing at the completion of taxane-based chemotherapy.<sup>19</sup> Yin et al. conducted a pilot study of 31 patients undergoing HCT (23 autologous, 8 allogeneic) and found statistically significant decreases in the 6-minute walk test and Short Form-36 vitality after HCT.<sup>20</sup> Additional studies examined changes in weight after colon cancer treatment,<sup>21</sup> musculoskeletal outcomes in men with prostate cancer receiving androgen deprivation therapy,<sup>22</sup> and cancer-related wounds in post-acute/long-term care.<sup>23</sup> These studies moving beyond traditional oncology outcomes are important for broadening our understanding of the day-to-day impact of cancer treatment on older adults.

Prior literature indicates wide variation in the prevalence and risk factors for cognitive impairment in older patients with cancer. Negrete-Najar et al. conducted a retrospective review of patterns of clock drawing test errors for 274 adults age 70 years with cancer and no diagnosis of dementia or brain metastasis.<sup>24</sup> Clock drawing tests were scored on a 16 point scale using previously published categories of normal (14–16 points), mild cognitive impairment (12–13 points), and cognitive impairment (11 points).<sup>25</sup> They categorized 59% as having mild cognitive impairment and 28% as cognitive impairment, and found that the most common errors were conceptual, particularly misinterpretation of time.<sup>24</sup> Overall clock scores did not change 3 months following chemotherapy and were not associated with AEs or unplanned hospitalizations. This may reflect the heterogeneity of cancer subtypes and treatment regimens, the relatively short follow-up, or insensitivity of the clock draw to detecting subtle changes over time. Adding to our understanding of the epidemiology of cognitive impairment among older adults with cancer, Mir et al. found that among 159 older adults with newly diagnosed gastrointestinal cancer 24% self-reported mild cognitive dysfunction, and 7% self-reported moderate/severe cognitive dysfunction.<sup>26</sup> Self-reported cognitive impairment was associated with social activity limitations, ADL/IADL impairments, and mental health issues.

## Palliative Care Research

Studies examining the unique palliative care needs of older patients with cancer are needed, and AGS included diverse studies at this intersection. Garcia et al. reported on the differences in symptom burden between younger and older patients seen in a palliative care clinic embedded in a Veterans Affairs oncology practice (n=146).<sup>27</sup> They found that older patients reported more edema (13% vs 4%) and less nausea (30% vs 44%) compared to younger patients. Regarding health care utilization at the end of life, Lee et al. compared outcomes among 382 recently hospitalized adults age 65 years with solid tumors who

either were enrolled in hospice or not enrolled in hospice, but otherwise hospice-eligible (metastatic disease and Karnofsky Performance Status <50%).<sup>28</sup> They found older adults not enrolled in hospice had significantly higher rates of hospital readmissions (38.3% versus 30.5%) and lower rates of do not resuscitate status (36% versus 77%) compared to those enrolled in hospice, which is consistent with prior literature in seriously ill adults.<sup>28,29</sup> Finally, DeCastro et al. reported on implementation of a palliative care co-management model for inpatient acute leukemia and bone marrow transplant patients over a 12 month period.<sup>30</sup> Among 106 new consults, there was a reduced time to palliative care consults by approximately 50% for both inpatient acute leukemia (18.8 days decreased to 8.8 days) and bone marrow transplant patients (10.2 days decreased to 4.8 days). After implementing the co-management model, 50% of acute leukemia/lymphoma patients who died while inpatient received end-of-life care within the inpatient palliative care unit prior to death, and there was increased length of stay within this unit (1.1 days increased to 5.7 days).<sup>30</sup>

## Health Services Research

Several studies highlighted challenges in improving access to high-quality care. Older patients with cancer and multimorbidity are vulnerable to fragmented care during transitions between care settings. To address this problem, Kim et al. demonstrated the feasibility of a Transitional Care Management program for such patients at a tertiary cancer center, with the goal of further evaluating its impact on clinical outcomes.<sup>31</sup> For optimal oncologic surgical outcomes, patients are recommended to undergo surgery at high-volume centers. However, Lee et al. found that for patients undergoing non-palliative rectal cancer resection, those age 80 years were less likely to receive care at a high-volume facility and to travel long distances for treatment.<sup>32</sup> Although older adults comprise most cancer patients, they remain underrepresented in cancer clinical trials.<sup>33</sup> Kutlu et al. examined the relationship between age, comorbidities, and enrollment in cancer clinical trials and found that, with increasing age, having common comorbidities such as hypertension suppressed trial enrollment.<sup>34</sup> They advocated for re-examining trial criteria to ensure a study population that is representative of the cancer population.

## Communication and Decision Making

Previous research suggests that there is a high rate of disagreement about advanced cancer curability between older patients and their oncologists.<sup>35</sup> With regards to patients' prognosis, Loh et al. found that disagreement between older patients and their caregivers was high (48%).<sup>36</sup> In 26% of dyads, older patients were more optimistic whereas in 22% of the dyads, caregivers were more optimistic. Polypharmacy in patients, lower perceived self-efficacy in patient-physician interaction, and caregiver distress may be markers of poor patient-caregiver communication.<sup>37</sup> The study highlighted the need to further study how older patients and caregivers communicate with each other.

Treatment of acute myeloid leukemia (AML) has evolved in the past years, but the decision for intensive versus lower intensity treatment in the upfront setting for older adults is challenging. Abdallah et al. showed that many factors that affect oncologist and patient decisions (e.g., functional status, frailty, cognition, emotional health, social support, quality

of life) may be evaluated using patient-reported measures or a geriatric assessment.<sup>38</sup> In the same sample, Kadambi et al. found that older patients often felt that treatment was the only choice at the time of AML diagnosis and valued caregiver support.<sup>39</sup> Many felt that communication with their oncologists could have been improved, specifically in the area of AML diagnosis and treatment options and duration. Together, these abstracts will guide the design of a decision-making tool that will incorporate patient preferences and values. The development of such a tool was demonstrated by Shukla et al. in older adults with basal cell carcinoma.<sup>40</sup>

## Geriatric Oncology Education

The majority of clinicians caring for older adults with cancer receive little to no formal training in the unique needs of this population of patients, and therefore educational initiatives are needed.<sup>41</sup> Bharadwaj et al. developed an education program on care needs of older patients with cancer which reached 268 interdisciplinary providers (physicians, nurse practitioners, nurses, and social workers), and a community cancer screening and education program which was attended by 197 community members.<sup>42</sup> In addition, they discuss the development of a comprehensive geriatric oncology clinic soliciting referrals from community oncologists. In addition, Kim et al. discussed the performance of a full-day geriatric nursing education program provided for 436 oncology nurses.<sup>43</sup> Among the 192 nurses who completed pre- and post-intervention surveys, knowledge and behavior change scores significantly improved, although there was less implemented practice change than expected at 3 month follow-up.

## Conclusion

Geriatric oncology research at AGS incorporated diverse themes from researchers internationally and across the care continuum. While a majority of research focused on the impact of cancer treatment on patient outcomes and the use of geriatric assessments as a risk stratification tool, the range of topic areas demonstrates a broad and growing interest at the intersection of the two disciplines. The AGS Cancer and Aging Special Interest Group provides a venue to discuss the challenges and opportunities for geriatric oncology research, education, and clinical care. We anticipate future research will focus on the development of innovative care models and interventions to improve decision making and interdisciplinary care for older patients with cancer.

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