



Healthcare disparities in thoracic malignancies

Thanks to the pandemic and the concurrent social unrest, healthcare disparities in the United States has finally become a prioritized topic of discussion and a need for action (1,2). Race, ethnicity, socioeconomic status, education status, immigrant status, primary language, place of work, access to care, and housing in racially segregated neighborhoods all factor in the inequity of care. For example residential segregation significantly impacts the mortality rates of Blacks from benign diseases including hypertension, or cardiovascular disease (3), as well as the treatment for and outcomes of patients with solid tumors (4-7). Disparities exist in every phase of oncological care ranging from screening to diagnosis to delivery of treatment (8,9). Multiple studies have demonstrated potential causes for healthcare disparities in particular between Blacks and Whites (10,11). Proposed and established root causes of these disparities include biologic differences (12-14), access to healthcare, lack of insurance (14), socioeconomic factors (14,15), health literacy (16), and perception of the stigma of cancer (14). Some of the important steps in mitigating these disparities is to investigate the details of the causes and to raise awareness in the populations at risk. We invited clinicians and surgeons with their boots on the ground in this arena to provide current reviews of the literature on healthcare disparities in the management and treatment of those with thoracic malignancies. As follows we also will share some of our thoughts on the topic.

One of the important observations we have made is that when studying disparity, it is imperative to study these issues in the pertinent population. With regards to lung cancer screening, the National Lung Screening Trial investigators demonstrated the efficacy of CT screening, however with only 4.5% of study participation Blacks were severely under-represented (17). While that study set forth the lung cancer screening criteria (> age 55; pack year >30), we do not know how applicable the criteria are to Blacks, Indigenous people and other people of color. The Southern Community Cohort Study investigated ~85,000 non-screened adults of whom 67% were Black and found that Blacks develop lung cancer with lower smoke exposure (median pack year 26) than Caucasians (pack year 48) (18). To corroborate this suspicion, the same study showed that only 17% of Blacks compared with 31% of Whites meet current screening criteria. This racial disparity remained true among those who developed lung cancer—only 32% of Blacks compared with 56% of Whites who retrospectively met screening criteria were diagnosed with cancer (18). Working at a major safety-net hospital where Blacks represent ~35% of the patient population, we have shown that Blacks are less likely to be screened even when they meet the current USPSTF criteria (19). This evidence suggests that Blacks are at greater risk for lung cancer but less likely to be screened. Studies focusing on such vulnerable populations is necessary to bring a better understanding to this topic.

Disparity in screening in part explains why the vulnerable population would present at later stages. However, even when stage-matched, disparities persist in the delivery of treatment as well as the outcomes. In this issue Evans *et al.* review the role of disparity in the treatment of early-stage lung cancer patients and demonstrate that lower socioeconomic status is associated with a higher incidence of lung cancer, lower utilization of surgery and poorer outcomes after surgery (20). Lin *et al.* reviewing the role of disparities and stereotactic body radiotherapy (SBRT) for early stage lung cancer, demonstrate that patients with lower income, education, and socioeconomic origins were less likely to receive SBRT when indicated and more likely to receive conventionally fractionated external beam radiation or no treatment (21). For advanced lung cancers Stein *et al.* review differences in palliative care, mutation analysis and immunotherapy in particular (22).

With regards to other solid tumors, Delman *et al.* review the role of disparity in esophageal cancer and apply the conceptual framework of Torain *et al.*: patient, provider, system/access, clinical care/quality, and postoperative outcomes, to provide a straightforward approach to dissecting the issues and formulating specific interventions (23,24). Freudenberger *et al.* review the role of disparity in the diagnosis, treatment, and prognosis of malignant pleural mesothelioma, and Singh *et al.* provide an overview of disparities in extra-thoracic solid tumors (25,26). To address the issue of gender, Baiu *et al.* review the role of sex in the diagnosis, treatment and prognosis of women with lung or esophagus cancer (27).

In reviewing health disparities in thoracic malignancies, we can draw the following conclusions. Firstly, this is a pervasive societal problem and although the turbulence of 2020, got the ball rolling we cannot lose the momentum to address the injustice. Secondly, the complex nature of the issue mandates a move beyond the large databases to more investigations with granular details of the patients involved- capturing frailty indices, cultural concerns, social support. With this approach we

may move toward formulation of clear actionable items. The conceptual framework in the Delman *et al.* piece allows us to formulate focused interventions ranging from local community engagement efforts to policy changes at the system level. One example of community-level efforts is a geocode analysis at the local level using patient addresses, to identify specific communities needing more help. Thirdly, a combined effort may be in order to investigate this issue as a group, perhaps in the form of a consortium of safety-net hospitals (SNH). While no consensus exists on the definition of SNH (28), SNH in general provides healthcare for individuals regardless of their insurance status or ability to pay and thus play a major role in serving these vulnerable populations. Such combined efforts would lead to better representation of these populations in future studies, and more importantly, a better effort to study potential interventions to mitigate the disparities.

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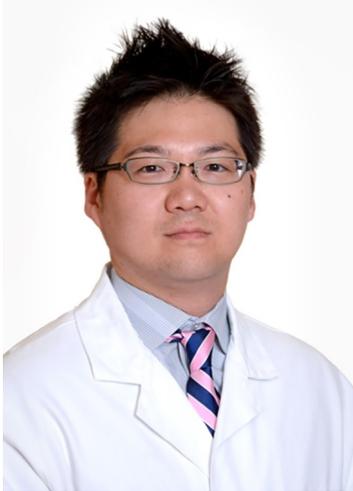
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