Editorial

One-size does not fit all: the challenges of surgical management in stage IV non-small cell lung cancer

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Despite the evolving treatment of non-small cell lung cancer (NSCLC), management remains challenging with poor survival rates particularly in those with stage IV disease (1). While multimodal therapy including radiotherapy has been utilized for this patient population, it has been shown that surgical management in patients with operable oligometastatic disease has had promising long-term survival or progression-free survival rates (1). It has been shown that complete surgical resection offers the best chance for local and/or regional disease control or cure (2). Even with the advent of improved patient selection and of developing therapeutic modalities such as chemotherapy, immunotherapy, and radiotherapy, indications for surgical management remain elusive.

Taylor *et al.* were able to demonstrate safe, therapeutic lung resection as part of a high-grade palliative multi-modality treatment in selected patients with low volume stage IV lung cancer (3,4). The findings were notable for encouraging rates of mid-term and overall survival (3). This study is an encouraging opportunity in the field of thoracic oncology that may provide valuable insight to patients who were previously deemed inoperable (5,6). However, the study also demonstrates the challenges and nuances associated with treating metastatic disease and generalizing treatment to a "one-size fits all".

The patient population studied by Taylor *et al.* was limited to 19 patients in the United Kingdom. As Taylor *et al.* has mentioned, though results are promising, a much larger cohort will be needed to generalize treatment strategies to a larger population. Additionally, only 1 patient in the cohort had an epidermal growth factor receptor (EGFR) mutation. When evaluating treatment strategies for patients with stage IV disease, identifying genomic alterations for guided therapy remains paramount. With limited amount of genomic data, the study does not accurately depict a heterogenous population and excludes the potential results of multimodal targeted therapy in lung cancer.

Taylor *et al.*, found encouraging peri-operative and mid and long-term survival rates in their patients with stage IV lung cancer who underwent lung resection. They found survival rates of 73.7% at 1 year, 52.6% at 2 years, and 47.4% at 3 years which is much improved from literature survival rates of patients who do not undergo surgical treatment (3). As stated, these superior survival rates are promising, but are likely due to patient selection. The patients selected were those who had minimal comorbidities and adequate physiologic reserve allowing them to tolerate not only medical and radiotherapy but surgical intervention. Finding select patients with minimal disease burden in the background of metastatic disease continues to be a challenge limiting the generalizability of the study. The study may demonstrate that selecting and capturing patients with oligometastatic disease with an appropriate response to medical therapy could be the key to providing the optimal treatment that may improve overall survival (7,8). It should be noted however that there were patients with T3/4 and N1/2 lesions, which historically have been associated with

more aggressive features which had favorable outcomes using Taylor *et al.*'s treatment modality (9,10).

Treatment of stage IV NSCLC remains challenging as majority of therapies are geared towards palliation and improving functional status and remain with a grim outcome (11). Taylor *et al.*, were able to demonstrate promising survival results with surgical intervention for oligometastatic disease adding promise to the armamentarium of treatment modalities to improve outcomes in those with stage IV disease.

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