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Commentary: Should Standard Uptake Value Decide Who Gets Surgery?

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Commentary: Should Standard Uptake Value Decide Who Gets Surgery?

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We read the article by Koike *et al.* regarding the role of positron emission tomography–computed tomography (PET-CT) in the management of lung cancer with great interest.[1] Management of patients with early stage lung cancer remains a clinical challenge, as many patients are ultimately upstaged on pathologic analysis after surgery. Evolving our understanding of this disease is essential to our patients. We applaud the authors' thorough review of current literature regarding the clinical use of the maximum standard uptake value (SUVmax). The strengths of this article are two-fold. Firstly, the authors were able to define the relationship of SUVmax to specific pathologic characteristics in a particular subset of patients. Secondly, their analysis dichotomized SUVmax into low-risk and high-risk cohorts.

The authors suggest that a high SUVmax may be a reason to avoid surgery in some patients. A previous meta-analysis demonstrated worse outcomes in patients with high SUVmax who underwent stereotactic body radiotherapy, however.[2] In this review of 11 articles which included 798 patients, a high SUVmax was associated with poorer overall survival, increased rates of local recurrence and a higher incidence of distant metastatic disease.

While these two studies demonstrate a correlation between SUVmax and worse clinical outcomes, there are many questions that remain. Despite a low false-negative rate, the reported false positive rate of 57% is quite high. In other words, more than half of patients with a high SUVmax tumor ultimately were not pathologically upstaged. Declining to operate based solely based on SUVmax would have likely led to worse overall survival in this patient population.

It also remains unclear if patients with a high SUVmax might benefit from mediastinal staging. A recent publication evaluating predictors of occult lymph node metastases in patients with Stage IA lung cancer highlights this dilemma. In this study, the authors found that while SUVmax correlated with occult lymph node metastases, the metabolic total volume was actually more predictive of lymph node involvement than SUVmax.[3] As such, SUVmax may not be the best metric to use in isolation, as other radiographic markers are more predictive of pathologic upstaging.

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Central Message

SUVmax correlates with high-risk features of lung cancer, but other variables do as well. SUVmax can be used alongside other data to guide patient management.

Finally, a small but notable limitation in this retrospective study was the lack of standardization of surgical resection. Patents underwent either lobectomy or segmentectomy without a defined extent of lymphadenectomy. A previous analysis of sublobar versus lobar resection showed a 39 percent increased rate of recurrent disease with sublobar resections.[4] In addition, sublobar resections may be associated with less comprehensive lymph node sampling which may understage tumors.[5–6]

Overall, we feel that this manuscript has expanded our understanding of SUVmax and is a valuable addition to the literature. This study will be helpful in the management of patients with early stage NSCLC and offers a stepping stone for further investigation. In the future, SUVmax may possibly be used with additional data to stratify patients with early stage lung cancer into low-risk and high-risk groups.

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