Commentary: Lest we biopsy: Positron emission tomography-computed tomography as a tool to achieve a “greater good” in the diagnosis and management of the resectable anterior mediastinal mass

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In the era of thoracoscopy, in the case of a surgically fit patient with an isolated and resectable anterior mediastinal mass, the surgeon need only consider management rather than dither on diagnosis. The solution is resection, and the diagnosis is provided by the pathologist at the time of surgery. Indeed, this approach is supported by national guidelines.1 This is an oversimplification, admittedly, for the exception that proves the rule, in this scenario, is lymphoma. While clinical context may provide a guide, such as myasthenia (present in 20%-25% of thymoma cases),2 B-symptoms (present in 34% of lymphoma cases in this study cohort),3,4 or hyperparathyroidism (ectopic parathyroid),5 cases will inevitably arise where the clinician is deprived of clear clinical or radiographic indicators. This leads to a small proportion of thymectomies, 4%, being performed for what is later proven to be lymphoma.6 Conversely, biopsy of a thymoma (44% in this study cohort) is to be avoided due to its real potential for mediastinal and pleural dissemination as well as biopsy tract seeding7 attributable to a thymoma’s unique crumbly texture. How then does the surgeon decide between these mediastinal Scylla and Charybdis?

One solution, as investigated by Byrd and colleagues,4 is to interrogate with positron emission tomography-computed tomography (PET-CT). The authors retrospectively identified isolated anterior mediastinal masses evaluated preoperatively with PET-CT followed by surgical resection. Their cohort consisted of 48 patients with thymoma and 29 patients with lymphoma. The maximum standardized uptake value (SUVmax) was greater with lymphoma, and SUVmax performed better than typical clinical indicators in multivariable analysis (although myasthenia gravis symptoms were excluded, and interestingly the absence of B-symptoms had a sensitivity for thymoma of 96%). The positive predictive value of SUVmax <7.50 was 100% for thymoma in this cohort. An SUVmax >12.85 was only seen in lymphomas in this cohort. The authors distill these findings into their practical guide, suggesting that SUVmax <7.50 is a safe threshold to proceed directly to surgical resection, whereas values greater than this should prompt consideration of biopsy.

The authors of this valuable study have seemingly focused predominantly on lowering the 4% rate of...
resections for lymphoma. We would counter that, in the age of minimally invasive resection, with the inherent low morbidity, the Bentham-like goal of achieving the utilitarian greater good would be to prioritize the diminution of preoperative biopsies of resectable thymomas. This would avoid the real potential of converting a stage I thymoma into its much more lamentable stage IV counterpart. Although there is potential morbidity in resecting a lymphoma, and delay to definitive systemic therapy, ultimately this does not create a situation where the lymphoma, once removed, is less treatable.

There is no perfect test that yet approaches the true answer found at pathology. Perhaps, in a way similar to the development of machine learning for pulmonary ground-glass opacifications, we will eventually be able to develop an imaging tool that will better predict the underlying diagnosis of these anterior mediastinal masses. In the interim, we have added the useful findings of this study into our management algorithm for anterior mediastinal masses (Figure 1).

References