Trends in Metastases among Patients with Masaoka-Koga Stage IV Thymic Epithelial Tumors

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Background: Thymic epithelial tumors (TET's), including thymomas (5 histological subtypes) and thymic carcinomas, are rare tumors with an estimated incidence of 0.15 per 100,000 person-years in the United States. While their etiologies remain largely unknown, some are associated with uniquely high rates of paraneoplastic syndromes and an elevated risk of secondary malignancies. And, though thymomas were once thought to be benign tumors, it is now well-documented that all TET's can metastasize. The gold-standard in TET staging, the Masaoka-Koga system, defines metastatic disease as Stage IV, further specifying pleural/pericardial metastases as Stage IVa and lymphogenous/hematogenous metastases as IVb. Unfortunately, little is known about patient prognosis as it relates to metastasis location. Here, we assemble and analyze one of the largest single-institution databases of TET patients in the world and seek to examine trends in metastases and their correlation with patient prognosis.

Methods: Files of 1023 TET patients seen at Indiana University Hospital were accessed via Cerner, after which a standardized information list including demographics, diagnostics, tumor histology, treatments used, disease course, and patient outcome at last follow-up was extracted and input into a RedCap database.

Results: Stage IV disease cases were filtered, yielding a total of 428 patients. Of these patients, 122 (29%) had carcinoma, making carcinoma the single largest histology represented in Stage IV. Locations of metastases also varied, with 284 patients (66%) having pleural metastases, 171 (40%) having lung, 71 (17%) liver, 58 (14%) bone, 56 (13%) pericardium, 37 (9%) neck lymph nodes, 12 (3%) brain, and 5 (1%) kidney. Moreover, 98 (23%) patients presented in stage IVb without any pleural/pericardial metastases. At last follow-up, 10% (19) of Stage IVa patients had no recurrence compared to only 3% (7) of IVb patients.

Potential Impact: These data altogether suggest that disease spread outside the thorax occurs much more commonly than previously reported, and that rates of metastasis vary with tumor histology. Future analysis will elucidate the exact differences in the patterns of spread among histological types, how these patterns correlate with prognosis, and the implications of this on screening and treatment options.