Optimizing CT Surveillance for Thymic Epithelial Tumors Based on Recurrence Characteristics

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Background:
Thymic epithelial tumors (TETs), including thymoma and thymic carcinoma, are rare malignancies originating from the thymus gland epithelium. Surgery is the primary treatment for early-stage disease, and post-operative surveillance is crucial for early detection of recurrence, which enhances eligibility for curative-intent treatments.

Purpose:
The National Comprehensive Cancer Network (NCCN) recommends chest CT scans every 6 months for 2 years, then annually for 10 years for thymoma, and annually for 5 years for thymic carcinoma. However, the optimal duration, frequency, and type of imaging for TET surveillance remain undetermined in published studies. This study hypothesizes that postoperative CT scan surveillance can be tailored based on WHO classification, Masaoka-Koga staging, resection margin status, and common sites of metastasis.

Method:
The REDCap database includes 1,089 TET patients seen at IU. Applying inclusion criteria of histological classification as thymoma or thymic carcinoma, surgical resection, and documented recurrence yielded 190 patients. Disease characteristics collected included WHO classification, Masaoka-Koga staging, resection margin status, and common sites of metastasis. Time to recurrence was categorized as early (<2 years), late (2-10 years), or very late (>10 years). ANOVA assessed associations between time to recurrence and disease characteristics.

Result:
WHO classification was the most significant predictor of recurrence timing ($p = 0.0465$), with higher classifications indicating earlier recurrences. Other disease characteristics were not significant predictors. Eight patients experienced recurrence beyond 10 years. Metastatic sites in 11% of thymomas and 19% of thymic carcinomas were detected via abdominal CT scans, highlighting gaps in current guidelines.

Conclusion:
The study emphasizes the need to tailor postoperative surveillance based on WHO classification. Findings suggest extending surveillance beyond 10 years and incorporating abdominal imaging to detect metastases. These insights recommend that the NCCN update current guidelines, aiming to improve long-term outcomes for TET patients. Future research will include expanding the cohort to non-recurrent cases to better assess recurrence risk characteristics.