AB010. Thymoma and T-cell lymphoblastic leukemia/ lymphoma: where is the connection?

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Background: Despite the thymus' role in leukemogenesis in experimental animal models, the association between thymoma and T-cell acute lymphoblastic leukemia (T-ALL) has rarely been described and the pathogenic mechanism remains unknown. Here, we describe three patients who presented with thymoma and T-ALL seen within our practice in the past 10 years.

Case Description: Patient #1—a 43-year-old woman presented with mediastinal mass. Biopsy showed T-ALL (6;7 translocation) as well as B1 thymoma. Completed curative intent treatment of T-ALL and maintenance therapy with no evidence of disease in 2017. In 2018, she had a recurrent mass and underwent thymectomy demonstrating B1 (60%) thymoma without evidence of T-ALL. Next generation sequencing (NGS) testing showed no pathogenic mutations. She has been refractory to 2 lines of palliative chemotherapy and has now undergone palliative resection. Patient #2—a 34-year-old man found to have stage IV AB thymoma in 2007 with palliative chemotherapy. He relapsed in 2010 and received 4 more cycles of treatment, then underwent surgical resection. In November 2011, found increasing lymphadenopathy on neck and axilla. Right axillary node biopsy reported lymphoblasts and bone marrow biopsy (BMB) revealed T-ALL with complex cytogenetics. T-ALL was refractory to numerous lines of chemotherapy, and he passed away from disease progression. Patient #3—a 48-year-old man with history of stage IV B1 thymoma with recurrence in 2008, underwent chemotherapy and resection. Foundation one testing showed FLT3 (K207I) mutation. He had slow asymptomatic progression of thymoma in pleural metastasis and chose not to do active systemic therapy. In 2021, imaging reported hilar, subcarinal and axillary lymphadenopathy, and was also cytopenic. BMB positive for T-ALL cytogenetics revealed a complex karyotype with NGS sequencing revealing mutations in TP53 (R273H) and again, FLT3 (K207I). He passed away from disease progression.

Conclusions: These cases highlight the association of thymoma with aggressive T-ALL. Given the common origin of these malignancies in the thymus it raises questions about the pathogenesis of these diseases. We speculate that oncogenic signals in the thymic tumor microenvironment may support T-ALL leukemogenesis.

Keywords: Thymoma; T-cell acute lymphoblastic leukemia (T-ALL); lymphoma; case report

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Footnote

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Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013). Written informed consent was obtained from 2/3 of patients for the publication of this case report. Written informed consent from one of the patients for publication of this case report was not obtained from the patient or the relatives after all possible attempts were made. The article has been sufficiently anonymized to cause no harm to the patient or his or her family. Copies of the two obtained written consents are available for review by the editorial

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