



AB011. OS03.01. Expression of L-type amino acid transporter 1 is possible diagnostic and prognostic marker of thymic carcinoma

Sumiko Maeda¹, Yoshimasa Nakazato², Keitaro Hayashi³, Morimichi Nishihira¹, Takashi Inoue¹, Osamu Araki¹, Yoko Karube¹, Satoru Kobayashi¹, Masayuki Chida¹

¹General Thoracic Surgery, ²Department of Diagnostic Pathology, ³Department of Pharmacology and Toxicology, Dokkyo Medical University, Shimotsuga-gun, Japan

Background: According to the WHO classification, thymic epithelial tumors (TET) are classified from type A thymoma to thymic carcinoma, though for pathological diagnosis a type B3 thymoma can be difficult to distinguish from a thymic carcinoma, which is a rare malignancy and its treatment is challenging. Recent studies have demonstrated that L-type amino acid transporter 1 (LAT1) is a cancer-specific amino acid transporter on the membrane of many different types of cancer cells, while its expression has been associated with poor prognosis in cases of malignancy. The purpose is to investigate the differences in expression of LAT1 among TETs and its impact on prognosis of affected patients.

Methods: We conducted a retrospective observatory study. Forty-six patients with TETs who underwent surgery at our institute between April 2001 and December 2014 were analyzed. Patient data were collected from medical records. Pathological diagnosis was made according to the WHO classification. Formalin fixed paraffin embedded surgical tissues were reacted with an anti-LALT1 polyclonal antibody. In addition, survival analysis of 14 patients with thymic cancer was

conducted using the Kaplan-Meier method, and a comparison between two distinct groups was performed using a log-rank test, with $P < 0.05$ considered to indicate significance. This study was approved by the Ethical Committee of Dokkyo Medical University Hospital (#28057).

Results: The patients were 21 males and 24 females, ranging in age from 22 to 80 years (average 62 years). Four patients had a type A thymoma, 10 type AB, 8 type B1, 6 type B2, and 4 type B3, while 14 had a thymic carcinoma. LAT1 immunoreactivity was observed on the membrane as well as in cytoplasm of thymic carcinoma cells, while no immunoreactivity was present in thymoma cells regardless of type. Four thymic carcinomas demonstrated LAT1 immunoreactivity on the cell membrane (membranous signal) and 10 in cytoplasm (cytoplasmic signal). Survival analysis of the 14 thymic carcinoma patients showed inferior prognosis for those with a membranous signal (median survival 14 months) as compared to a cytoplasmic signal (median survival 42 months) (log-rank test, $P = 0.034$).

Conclusions: In the present study, we observed LAT1 immunoreactivity in thymic carcinoma tumors but not in thymomas including type B3. Survival analysis revealed poor prognosis for patients with a thymic carcinoma with LAT1 immunoreactivity on tumor cell membranes. Our results suggest LAT1 as a possible diagnostic and prognostic marker of thymic carcinoma.

Keywords: L-type amino acid transporter 1 (LAT1); thymoma; thymic cancer

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