

AB007. OA01.07: CD70 in thymic carcinoma: a promising diagnostic marker

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Background: CD70, one of tumor necrosis factor family protein, is reported to be expressed in a large spectrum of solid tumors and hematological malignancies. CD70 is an attractive target for antibody-based therapy and several clinical trials targeting CD70 are being conducted. We previously demonstrated CD70 expression was frequently observed on neoplastic epithelial cells of thymic squamous cell carcinoma (TSCC) via immunohistochemistry (IHC) with antibody for frozen section in the limited number of samples. There have been no reports of CD70 expression focusing on formalin fixed paraffin embedded (FFPE) thymic tumors. In this study, we investigated the utility of a CD70 antibody applied on routine FFPE tissues by assessing a larger number of thymic epithelial tumors, thymic carcinoids and lung squamous cell carcinomas (LSCCs).

Methods: FFPE tissues of TSCC (operative specimens: n=34, biopsy specimens: n=11), thymoma (n=59), thymic carcinoid (n=3), and LSCC (n=30) obtained in a single institution were immunohistochemically analyzed with anti-

CD70 antibody (TNFSF7, clone 301731, R&B systems) Immunoreactivity for CD70 were semi-quantitatively scored according to the proportion of positive cells. IHC of CD5 and CD117 was also performed. We compared mRNA level of CD70 from frozen tissues of TSCC (n=12) and certain subtypes of thymoma with little lymphocyte infiltration (type A: n=4, type B3: n=6) by quantitative real-time polymerase chain reaction (RT-PCR).

Results: Seventy-nine percent (27/34) of TSCC cases were positive for CD70, meanwhile all thymoma including type B3 and thymic carcinoid cases were negative. Twenty percent (6/30) of LSCC cases were positive for CD70, but it was significantly lower than TSCC cases ($P<0.0001$). Biopsy specimens of TSCC also showed almost the same positivity as operative ones (81%, 9/11). Biopsy and resected specimens obtained from the same patients demonstrated consistent staining pattern (100%, 6 of 6 patients). The proportion of CD70-positive TSCC was little lower than CD5 (91%) and CD117 (100% of operative specimen); however, one CD5-/CD117-TSCC turned out to be CD70 positive. Quantitative RT-PCR also showed CD70 expression was significantly higher in thymic carcinomas than thymomas ($P=0.019$).

Conclusions: CD70 immunohistochemistry with a paraffin section-reactive antibody is useful in distinguishing TSCC from histological mimickers such as type B3 thymoma and LSCC. TSCC may also be a promising candidate for immunotherapy targeting CD70.

Keywords: CD70; real-time polymerase chain reaction (RT-PCR); immunohistochemistry; thymic carcinoma

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