

Abstract

Small cell lung carcinoma (SCLC) and pulmonary large cell neuroendocrine carcinoma (LCNEC) are both classified as lung neuroendocrine carcinoma (NEC). It has recently been reported that the special AT-rich sequence-binding protein 2 (SATB2), known as a colorectal cancer marker, is also expressed in NECs occurring in various organs including the lung. However, few studies have examined any differences of SATB2 immunopositivity between SCLC and LCNEC. We investigated SATB2 expression in 45 SCLC and 14 LCNEC cases using immunohistochemistry as well as the expression of caudal-type homeobox 2 (CDX2) and keratin (KRT) 20. The LCNEC cases were more frequently positive for SATB2 (ten out of 14, 71%) than the SCLC ones (seventeen out of 45, 37.8%) with a statistically significance ($P = 0.035$). Furthermore, two LCNEC cases were positive for CDX2 while no positive findings were observed for any SCLC cases, the difference of which, however, was not statistically significant ($P = 0.053$). KRT20 was negative in all LCNEC and SCLC cases. These results require our attention when we use SATB2 and CDX2 as colorectal cancer markers because their expression in pulmonary NECs can lead to a misdiagnosis that the tumor is of metastatic colorectal adenocarcinoma, especially when the patient has a past history of colorectal cancer. Analyzing the relationship between the demographic/clinical variables and the SATB2 expression in the SCLC cases, just high Brinkman Index (≥ 600) was significantly related to the positivity of SATB2 ($P = 0.017$), which is interesting considering the strong relationship between SCLC and smoking.