Aim: Interleukin – 1 receptor associated kinase 1 (IRAK-1) is increasingly being recognized as an important mediator in cancer initiation and progression. Enhancer of Zeste Homolog 2 (EZH-2) promotes carcinogenesis by epigenetically silencing tumor suppressor genes. We studied IRAK-1 and EZH-2 expression in non-small cell lung carcinoma (NSCLC) and corresponding preneoplastic lesions.

Methods: Imprint smears from 102 NSCLC (adenocarcinomas and squamous cell carcinomas) and adjacent atypical squamous metaplasia (n = 20) and normal bronchial epithelium (n = 20) were studied for the immunocytochemical expression of IRAK-1 and EZH-2. The results were correlated with patients’ clinicopathologic features. Furthermore we investigated the correlation between IRAK-1 and EZH-2 expression in tumour imprint specimens.

Results: NSCLC tumors demonstrated significantly cytoplasmic and lower nuclear IRAK-1 expression and higher nuclear expression for EZH-2 than normal epithelium. Atypical squamous metaplasia had significantly higher cytoplasmic IRAK-1 and nuclear EZH-2 expression. In tumor specimens; significant positive correlation was detected between IRAK-1 expression and EZH-2 (p < 0.0001). The correlation between the expression IRAK-1 and EZH-2 and patients clinicopathologic features varied according to histological type of the tumor and the grade.

Conclusions: IRAK-1 and EZH-2 are expressed in high percentages in NSCLC imprint smears and their expression in specimens with atypical squamous metaplasia is an early phenomenon in the sequential development of lung cancer.

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