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The expression of synaptonemal complex protein 3 (SCP3) and phospho-akt in cervical neoplasias

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Purpose: Synaptonemal complex protein 3 (SCP3) is a marker for cell transformation, and it has been shown that the overexpression of SCP3 in tumor cells could lead to activation of AKT. This study explored expression of SCP3 and its relationship with the phosphorylated AKT (p-AKT) in cervical neoplasias.

Materials and Methods: Five hundred seven cervical tumor samples and matched normal epithelial samples were arrayed into tissue microarrays. The status of SCP3 and p-AKT was studied using immunohistochemical analysis. Staining results for each antibody were compared with clinical and pathologic features, and the relationship between staining results was explored.

Results: Expressions of SCP3 and p-AKT were significantly increased in cervical cancer cases compared with normal epitheliums ($P < 0.001$, each). Increased SCP3 expression was observed in patients with increasing tumor stage ($P = 0.002$) and tumor grade ($P < 0.001$). In multivariate analysis, disease-free survival in cervical cancer patients was significantly shorter in cases with overexpression of SCP3 (HR = 4.81 [1.37-16.95], $P = 0.014$), lymph node metastases (HR = 3.07 [1.23-7.67], $P = 0.016$), and advanced tumor stage (HR = 2.74 [1.09-6.88], $P = 0.032$). SCP3+/p-AKT+ expression ($P =0.034$) and increased tumor stage ($P = 0.006$) showed shorter overall survival by Kaplan-Meier analysis.

Conclusions: This study shows that SCP3 expression in addition to p-AKT predicts poor prognosis in cervical cancer. Moreover, the correlation between expressions of SCP3 with p-AKT indicates that SCP3 activation through the AKT pathway plays an important role in the progression of cervical cancer.

cervical cancer; tissue microarray; immunohistochemistry; SCP3; AKT pathway