Clinical significance of serum miR-196a in cervical intraepithelial neoplasia and cervical cancer

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ABSTRACT. Previous studies have reported that miR-196a is upregulated in cervical cancer tissues and cell lines. However, whether serum miR-196a is increased in patients with cervical cancer or cervical intraepithelial neoplasia (CIN), and its potential clinical value remained unknown. In total, 105 cervical cancer patients, 86 CIN patients, and 50 healthy volunteers were recruited. Quantitative reverse transcription-polymerase chain reaction was performed to compare the serum levels miR-196a in all participants. The associations between serum miR-196a and CIN grade/clinicopathological parameters of cervical cancer were also examined. A survival analysis was performed using the Kaplan-Meier method. Univariate and multivariate analyses were conducted to explore the independent risk factors for cervical cancer. Our results revealed that serum miR-196a levels were higher in patients with cervical cancer (P < 0.01) and CIN (P < 0.05) compared to those in healthy controls. Serum miR-196a was associated with CIN grade and various cervical cancer parameters including tumor size (P = 0.031), lymph node metastasis (P = 0.018),...
FIGO stage ($P = 0.004$), and grade ($P = 0.011$). Cervical cancer patients with higher serum miR-196a levels had a poorer overall survival rate ($P = 0.004$). Multivariate analysis revealed that high serum miR-196a was an independent predictor for poor survival of cervical cancer ($HR = 3.510; 95\% CI = 1.961-6.874; P = 0.025$). In conclusion, our findings suggest that serum miR-196a overexpression is associated with CIN grade and cervical cancer progression. Therefore, serum miR-196a may be a reliable biomarker for early detection and prognosis of cervical cancer.

**Key words:** Cervical intraepithelial neoplasia; Cervical cancer; miR-196a; Prognosis; Biomarker