

Serum PLR Combined with CA125, HE4 and ROMA Index: A Novel Multi-marker Strategy for Diagnosis and Prognostic Evaluation in Ovarian Cancer

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Abstract

Background: Ovarian cancer (OC) is a highly lethal tumor of the female reproductive system. Early diagnosis is vital for improving patient survival rates. Recently, the platelet lymphocyte ratio has emerged as an important biomarker that indicates serum inflammation. Therefore, this study aims to investigate the potential of combining serum PLR with CA125, HE4, and ROMA for diagnosing and assessing the prognosis of ovarian cancer, especially in its early stages. **Methods:** We measured and analyzed CA125 and HE4 levels in 141 OC patients and 138 controls, using complete blood count (CBC) and enzyme-linked immunosorbent assay (ELISA). After validating the biomarker panel, we assessed the associations by comparing the expression levels of biomarkers in OC patients with varying clinical characteristics. We also collected two individual cohorts: a training cohort and a validation cohort. Multivariate Logistic regression model was constructed to screen the best combination, and the diagnostic efficacy of different combinations were compared by ROC curve, and the prognostic value was evaluated by Cox regression analysis and survival analysis. **Results:** PLR, CA125, HE4 and ROMA were significantly increased in OC patients. This elevation is particularly significant in patients with advanced disease, lymph node metastasis, and ascites. The combination of PLR, CA125, HE4 and ROMA improves the diagnostic efficiency of ovarian cancer. Furthermore, we discovered that combining PLR with CA125, HE4, and ROMA levels had considerable prognostic significance. **Conclusions:** Combining the PLR with CA125, HE4, and ROMA could improve the diagnosis of ovarian cancer. This combination may also enhance prognostic capabilities.

Keywords

Ovarian Cancer, the Platelet Lymphocyte Ratio, ROMA Index, Prognostic Marker