Unravelling the potential utility of three serum biomarkers (CA-125, HE4 and CCLL11) in distinguishing between benign and malignant epithelial ovarian cancer (EOC)

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ABSTRACT

Introduction: The inclusion of serum immune markers in addition to CA-125 and HE4 may improve the identification of malignancy in patients with EOC over current diagnostic methods. This study aimed to determine the potential of biomarkers that can discriminate between EOC patients and benign ovarian mass. **Materials and Methods:** In this single-centre prospective trial, preoperative blood samples from 35 women undergoing ovarian surgery for ovarian masses were examined. Of these, 17 patients were diagnosed with pathologically confirmed benign tumours, while 18 had malignant ovarian tumours. Blood serum was assessed for CA-125, HE4, CCL11 and nine other biomarkers using multiplex immunoassay analysis. Each individual protein, as well as a logistic regression model incorporating all the mentioned proteins, were evaluated as preoperative predictive markers for suspicious ovarian masses. **Results:** Serum CA-125, followed closely by HE4 emerged as a highly accurate tumour marker for ovarian cancer. Significant differences in CA-125, HE4 and CCL11 were observed between benign and malignant ovarian masses. A logistic regression model incorporating CA-125, HE4 and CCL11 was developed to predict malignant ovarian tumours. With a high discriminative AUC, it proved to be a good sensitive and specific diagnostic test for malignant ovarian tumours. **Conclusions:** The derived formula, comprising the combination of serum levels, outperforms individual markers in its diagnostic accuracy for discriminating between benign and malignant ovarian tumours. While the formula yielded high accuracy in our patient population, further validation in a larger cohort is warranted.