A novel biomarker and a novel target for the immunotherapy of early stage ovarian cancer

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Introduction

Ovarian cancer (OC) affects approximately 7000 women in the U.K. every year. It can occur at any age but is most common after menopause. Diagnosis at an early stage of disease greatly improves the chances of effective treatment however, diagnosis tends to be in the later stages of disease when patients present with pelvic or abdominal pain, urinary frequency or urgency, increased abdominal size or bloating. A diagnosis of OC is usually confirmed by a pelvic examination, transvaginal ultrasonography and detection of carbohydrate antigen 125 (CA125) in the tumour tissue. However, CA125 has proven to be non-specific with variable expression between patients, which appears to work better as part of a panel to improve specificity, sensitivity (100%) and differentiation of OC from endometriosis.

Methods

Using immunohistochemistry we examined the expression of a panel of tumour antigens including ovarian cancer protein (OCP), as well as the standard biomarkers for OC, CA125, HE4 and WT1, in paraffin-embedded OVC microarrays containing 208 samples. Scoring was performed in a single blinded fashion.

Results

We found OCP to be expressed at an intensity and frequency that exceeded that of CA125, HE4, WT1 or PASD1 in stage I and II OC. To confirm this expression we used two additional commercially-available antibodies that recognised OCP and demonstrated that this expression was reproducible and restricted to OC with little or no expression in adjacent, healthy ovarian or endometrial tissues, or indeed disease or inflamed endometrial tissue.

Conclusion

We have identified a cancer-testis antigen that is more frequently and more intensely expressed in presentation Stage I and II OVC than CA125, HE4 and WT1. We now wish to determine whether OCP can be detected in stage III and IV OC at disease presentation.