

Serological identification of a novel tumor-associated antigen involved in tumorigenesis of ovarian cancer

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Ovarian cancer is the highest mortality in women. Using the phage-display libraries approach, we found putative polypeptide encoded by OVTA1 gene contains Pro-His-Gly-Tyr-Ala-His sequence as a specific tumor-associated antigen that expresses to highly grade human ovarian cancer. By using immunohistochemical staining, the expression of OVTA1 was low in low-grade and was gradually increased in high-grade ovarian cancer with statistically significance. In vitro study showed that OVTA1 highly express in high-grade ovarian cancer cell lines, SKOV-3 and TOV112D, but low in low grade ovarian cancer cells, OVCAR3. Silencing of OVTA1 by specific siRNA, we found that cell migration and proliferation were significantly suppressed in SKOV-3 cells. In the other hand, OVTA1 overexpression induced both cell migration and proliferation in OVCAR3 cells. These results indicated that expression of OVTA1 is correlated with cell migration and proliferation. In vivo, we have demonstrated that SKOV-3/shOVTA1 cells showed decrease tumorigenicity in severe combined immunodeficient (SCID) mice as compared to wild type cells. Our results strongly suggest that OVTA1 expression may be associated with tumorigenesis or tumor malignancy to ovarian cancer.