Ovarian Cancer Pathogenesis Is Associated with Decreased Expression of the Zinc-Finger Transcription Factor SLUG

Kelly, Emma (School: Newton Country Day School of the Sacred Heart)

The goal of this study was to analyze the expression of SLUG in ovarian cancer. The null hypothesis was that expression of SLUG would be the same between the two tissue types. This study used immunohistochemistry to analyze the presence of SLUG in murine xenografts made from the human ovarian cancer cell line OVCAR3. Sixteen OVCAR3 xenografts were compared to normal tissues from three non-tumor bearing mice. Slides were incubated with a blocking buffer to prevent non-specific binding of proteins before being incubated with rabbit anti-SLUG primary and anti-rabbit biotinylated secondary antibodies, then incubated with an avidin/enzyme complex and exposed to the substrate 3,3'-diaminobenzidine (DAB), then counterstained with hematoxylin. Stain intensity and percentage of cells stained were scored on a scale from 0 to 3 and then multiplied together to create an H-score for each section. Ovarian follicles were used as positive controls, while sections incubated without primary antibody were used as negative controls. Interobserver agreement was assessed by calculating a weighted Cohen's Kappa statistic. The median H-scores between normal fallopian tube epithelia and ovarian cancers were compared using a Mann-Whitney U test. The weighted Kappa statistic for the H-scores was 0.67 (95% CI 0.53 – 0.81), which falls within the "good" range of concordance. Staining was strong and uniform in normal fallopian tube cells, with a median H-score of 7.7±1.3, compared to mostly negative in ovarian cancer tumor cells, with a median H-score of 0.42±0.21 ($p=0.002$), with a 0.05 alpha statistic taken as significant. The null hypothesis was rejected, as the staining patterns for SLUG were markedly different between normal fallopian tube epithelium and ovarian cancer tumors.