A study of association between low-grade serous ovarian cancer and Hereditary Breast and Ovarian Cancer based on family history

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Hereditary Breast and Ovarian Cancer (HBOC) is a cancer susceptibility syndrome caused by mutations in BRCA1 and BRCA2. While high-grade serous ovarian cancer is known to be associated with HBOC, it is hypothesized that low-grade serous ovarian cancer represents a distinct entity with a unique tumorigenesis pathway. Little data exists on the BRCA1/2 mutation status of women with LGSOC. Family history is an accurate predictor of the likelihood a given person will test positive for a BRCA1/2 mutation. The specific aim of this study is to determine if there is a significant difference in the personal and family history of women with low-grade serous ovarian cancer compared to women with high-grade serous ovarian cancer.

The study population consists of women with low-grade serous ovarian or primary peritoneal cancer who presented to M.D. Anderson Cancer Center (MDACC) between 1986 and 2008. The control group consists of women with high-grade serous ovarian or primary peritoneal cancer. Data was collected by retrospective chart review. The BRCA Mutation Prevalence Tables were used as a surrogate measure of how suggestive each subject’s personal and family history is for HBOC (referred to as a risk estimate score) and were analyzed using a conditional logistic regression model.

In total, 195 cases and 386 controls were included in the analysis. A significant difference was detected in the family history by degree of relation, with cases being significantly less likely to have a first- or second-degree relative affected with breast or ovarian cancer. In addition, the risk estimate scores of women with low-grade serous ovarian cancer were significantly lower than those of women with high-grade serous ovarian cancer. These results indicate that women with low-grade serous ovarian cancer are less likely to have a suggestive personal and family history compared to women with high-grade serous ovarian cancer. In summary, this study provides further evidence that LGSOC is not as suggestive for HBOC compared to HGSOC and should be treated as such in a risk assessment. Future studies might include genetic testing of women with LGSOC to further define how LGSOC is related, if at all, to HBOC.

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