Comparison of Non-Breast and Ovarian Cancer Phenotypes of BRCA1/2 Mutation Carriers Across Multi-Gene Panels

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BACKGROUND
• BRCA1/2 germline mutations account for ~50% of hereditary breast and ovarian cancers.
• Until 2013, single gene testing identified individuals with BRCA mutations. With multi-gene panel testing (MGPT), BRCA1/2 mutations are being identified in an increased rate and/or in a variety of phenotypes.
  ➢ Breast, ovarian, prostate, pancreatic cancer, and melanoma have been the core cancers reported. The phenotype of mutation carriers identified by MGPT is not well understood.

RESULTS
• 2,967 BRCA1/2 positive probands
• 2,439 (82.2%) had a known history of cancer
  ➢ 2,794 cancers reported
• Breast and/or ovarian cancer were the most commonly observed cancer types (n=2,364, 84.6%), with the exception of a pancreatic cancer specific panel.
• Breast and/or ovarian cancer, and non-melanoma skin cancers were excluded from the cancers observed.
• Other cancers reported included a variety of the following: appendiceal, sweat gland, lung, throat, esophageal, cholangiocarcinoma, bile duct, anal, vulvar, mullerian, omentum, oropharyngeal, soft tissue, vaginal, tongue, small intestine, unspecified adenocarcinoma, livers, tonsil, unspecified neuroendocrine, testicular.

GENDER AND BRCA MUTATION DISTRIBUTION

METHODS
• Data from 77,345 test requests submitted to our laboratory for hereditary cancer testing were retrospectively reviewed.
  ➢ BRCA1/2 single gene testing between June 2013 and February 2015
  ➢ MGPT (5-49 genes) including BRCA1/2 between June 2013 and June 2015
• Proband with a BRCA1 and/or BRCA2 mutation were analyzed.
• Probands with no personal history of cancer/not provided (n=928) were excluded.

CANCERS OBSERVED BY MGPT OVERALL

TAKE-HOME POINTS
• For tumor-specific MGPT, the most frequently seen cancers matched the panel ordered when breast and/or ovarian cancer are included.
• On the comprehensive MGPT, there appears to be a more even distribution of various cancer types, including rare tumors.
• Further studies should be conducted to examine the phenotypes of BRCA1/2 mutation carriers identified via MGPT to determine if there is a true association and what the prevalence of unexpected cancer types may be.

REFERENCES