Molecular Profiling of Metastatic Breast Cancer in Body Cavity Fluids

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Abstract

Background: The diagnosis of malignancy in effusions is often difficult and it is associated with a worse prognosis regardless of tumor stage. The cancer cells in fluids have unique genomic and phenotypic characteristics that are uniquely different from primary tumors. Therapeutic guidance should be based on the evaluation of tumor traits. This study reports the feasibility of molecular profiling for breast cancer metastases in pleural and peritoneal fluids.

Methods: A computer search was conducted to retrospectively identify malignant effusions. We included all cases of breast cancer, lung cancer, ovarian cancer, melanoma, and other cancers associated with pleural or peritoneal effusions. For this study, we performed Molecular Profiling of effusion samples can provide insight into the molecular characteristics of malignant effusion cells and associated expression of unique therapeutic targets.

Results: A total of 172 cases were reviewed of which 28 were reviewed of which 16 were metastatic breast cancer, 4 were metastatic esophageal cancer, 4 were metastatic lung cancer, 5 were metastatic pancreatic cancer and 4 were other type of tumors.

Figure 1: A total of 172 cases were reviewed of which 28 were metastatic breast cancer, 4 were metastatic esophageal cancer, 4 were metastatic lung cancer, 5 were metastatic pancreatic cancer and 4 were other type of tumors.

Figure 2: From the 28 breast cases were able to perform at least 10 IHCs in 20 cases, between 1 and 9 IHCs in 1 case and 7 cases were insufficient to perform any IHCs.

Figure 3: Case of triple negative breast cancer with expression of various biomarkers by IHC.

Figure 4: Case of hormone receptor positive Her2 negative breast cancer with microarray results.

Figure 5: Case of hormone receptor positive breast cancer with expression in peritoneal fluid.

Figure 6: Case of triple negative breast cancer with expression of various biomarkers by IHC.

Figure 7: Case of triple negative breast cancer with expression of various biomarkers by IHC.

Figure 8: Case of hormone receptor positive Her2 negative breast cancer associating biomarker expression with agents with benefit and lack of benefit.

Figure 9: Example of Caris Target Now report from a hormone receptor positive Her2 negative breast cancer.

Conclusions:

- Molecular profiling of malignant effusions offers additional opportunities for testing those patients where other tissue samples such as needle core biopsy or resection samples are not available.
- Molecular profiling provides insight into the molecular characteristics of malignant cells.
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- Molecular profiling of malignant effusions can provide information on therapeutic guidance in 21 of 28 cases.
- Molecular profiling provides additional opportunities for testing those patients where other tissue samples such as needle core biopsy or resection samples are not available.

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