A triple negative breast cancer: what it is not!

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Abstract: The triple negative cancer is an unusual, and at the same time, a unique entity where the discordance rate is almost 18%. That means 18% of Her2 negative results will transform into a Her2 positive status and will have the affinity to spread to the central nervous system (CNS). With the identification of CD44, CD24, and ALDH1, we may be able to determine which group of triple negative breast cancer patients will have CNS metastasis. This case illustrates the Her2 expressing cells have higher CNS affinity. As the original tumor was Her2 negative, if a genomic assay was then done on this patient, we would have identified the potential of CNS involvement. In conclusion, genomic assays should be routinely done on triple negative cancers.

Keywords: triple negative, breast cancer, claudin high or low, genomic microassay

Introduction
With this case illustration, we want to show how a triple negative breast cancer is not what it appears to be. The triple negative breast cancer is a unique entity that has been shown to be basal.1,2 This is definitely not one disease; genomic and microarray assays have shown this to be inhomogeneous cancer. Though we could not perform the genomic assay, had it been done we believe we could have shown in this patient CD44 high, CD24 low, and ALDH1 high expressing cells.

Case history
Our patient was in triple negative stage II and treated with anthracycline- and taxane-based chemotherapy, but when it metastasized, it showed Her2 positive cancer cells in the CNS location and triple negative features in the lung metastasis. This is the first reported human case that such discordance between primary and metastatic disease is shown.

A 43-year-old female patient was diagnosed with infiltrating ductal carcinoma of the left breast. She underwent a left modified radical mastectomy at Mayo Clinic in Scottsdale, AZ. Her carcinoma was triple negative and was 1.5 centimeters in size with two axillary lymph nodes showing metastasis. She then had adjuvant chemotherapy with epirubicin and docetaxel 75 mg/m² intravenously, every 3 weeks for six sessions. She required granulocyte colony-stimulating factor support from the second session onwards, as she developed febrile neutropenia following the first chemotherapy treatment.

Two years later, whilst in remission, she had a bilateral reconstruction following simple mastectomy on the right side. In the third year, as she was visiting her family in Puerto Rico, she developed severe headaches followed by seizures. The computed tomography (CT)
shown to be 17.6%. That means 17.6% of triple negative breast cancers have also shown increased vascularity on MRI scans of the breast, indicating increased angiogenesis. Does this mean they secrete an increased amount of vascular endothelial growth factor and, if so, should we incorporate angiogenesis inhibitor routinely with chemotherapy in these patients?

Even though the Food and Drug Administration has retracted approval of angiogenesis inhibitors in breast cancers, there may be an indication for it in the triple negative breast cancers. As bevacizumab is used in glioblastoma multiforme, there may be a need for it in CD44 high, CD24 low, and ALDH1 high expressing tumors which have high CNS affinity.

**Conclusion**

As the molecular analyzes shed more light on triple negative breast cancer, we think it will become the norm to do these analyses on this unique type of cancer. This will be the major molecular determinant to lead to the individualization of care for this cancer.

**Disclosure**

The author reports no conflicts of interest in this work.

**References**
