CLINICAL VIGNETTE

Metastatic Breast Cancer: A Hypermetabolic Splenic Mass

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A 68-year-old female presented for her screening mammogram. She had no history of abnormal mammograms, but this time was found to have a right-sided breast abnormality. Biopsy was consistent with a hormone-positive, human epidermal receptor 2 (HER2)-negative invasive ductal carcinoma. Breast magnetic resonance imaging confirmed the sole breast lesion; however, it also demonstrated abnormal lesions in the sternum consistent with bone metastases. Positron Emission Tomography/Computed tomography (PET/CT) demonstrated small lesions throughout the thoracic spine and pelvis. All lesions were too small for biopsy. Given her metastatic disease, she was treated with various endocrine therapies over the subsequent years (aromatase inhibitor, tamoxifen, fulvestrant) with good control of the cancer. Her bone disease was never large enough for biopsy. Several years into her treatment, she was noted to have a hypermetabolic splenic lesion that continued to grow on serial imaging despite fairly stable disease in the bones. An attempt at biopsy was non-diagnostic. She was continued on endocrine therapy. The spleen continued to grow in size, multiple lesions eventually developed, and with time, the hypermetabolic lesions became more diffuse and confluent. Over the course of changes in the spleen, the patient also had worsening cytopenias. Bone marrow biopsy was consistent with a mildly hypocellular marrow (~30% cellularity) of unclear etiology, but no malignancy was present. The cytopenias worsened to eventual white blood cell counts below 2, absolute neutrophil count 200, hemoglobin 9.2, and platelets of 29. She did respond well to filgastrim and proceeded with splenectomy. Pathology showed vascular congestion of the spleen, increase in hemophagocytic histiocytes, and no evidence of lymphoproliferative disease or metastatic carcinoma. Immediately post-operatively, all her blood counts steadily rose and within a couple weeks had all normalized.

Splenic tumors are uncommon and usually of inflammatory or other benign etiologies.[1] The spleen is an especially atypical location for solid tumor metastases.[2] It is hypothesized that multiple factors make metastatic disease rare at this site, including strong immunologic surveillance in the microenvironment, less lymphatic input, and mechanics of the splenic artery (for example, high blood flow).[2] Review of the literature for similar clinical characteristics as above revealed multiple case reports and patient series regarding a benign vascular phenomenon called sclerosing angiomatoid nodular transformation of the spleen (SANT).[1,2] It is a rare entity, not defined until 2004, so with growing awareness more diagnoses may be reported.[1,3] In most of the case series, SANT is an incidental finding.[1,3] Otherwise, non-specific abdominal pain is the most common presenting symptom.[1] Imaging is not generally helpful due to lack of distinguishing characteristics, and as seen here, despite being benign, can be hypermetabolic on PET/CT imaging.[1-4] The only definitive way to make the diagnosis is with tissue evaluation.[1,2] Biopsy has been used to make the diagnosis; however, due to the vascular nature of the spleen and potential for bleeding, splenectomy is the usual mode of diagnosis.[1,4] Splenectomy also appears to be curative.[1,3] The underlying cause of SANT is uncertain but hypothesized to be related to an atypical red pulp reaction due to inflammation or vascular injury of unknown trauma.[2,3]

In the case above, it was impossible to ignore growing, hypermetabolic splenic lesions in the setting of metastatic breast cancer and no other abdominal disease over years of follow up. This patient had worsening splenomegaly and life-threatening cytopenias, an atypical clinical picture for metastatic breast cancer, and an indeterminate biopsy attempt. Thus, splenectomy became imperative to direct future therapy. It was especially important since her cytopenias posed an issue for future oncologic management. Review of the literature revealed a similar presentation of a woman with breast cancer treated curatively years prior with incidental finding of a splenic lesion. Initial biopsy attempts were unsuccessful, but eventually showed features similar to the case above, including vascular congestion, fibrosis, and numerous histiocytes, which was consistent with a diagnosis of SANT.[2] While a diagnosis of SANT was not made by the local pathologist in the case reported here, the pathologic features are consistent with the prior case descriptions, most notably the features of vascular congestion and histiocytosis. SANT is still a relatively unknown entity, and thus, most centers may still not be familiar with this process in order to make the diagnosis.

There did not seem to be any reports associating known malignancy and SANT. Many of the case reports were not associated with malignancy unlike this case. Furthermore, it was not clearly related to any of the prior breast cancer treatments. However, given the small numbers reported in the literature, it is impossible to make associations. Further investigation is necessary to determine if there are common risk factors. Given the benign nature of the disease, physicians may not be motivated to look for secondary causes, and thus, a larger systematic review would be important as SANT is more widely recognized.

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