Purpose: In recent years, there has been remarkable progress in understanding factors that put women at risk for breast cancer. In addition to genetic factors, there is evidence that estrogen exposure represents a significant risk factor for the development of breast cancer. This evidence has lead to the NSABP Chemoprevention trial, which demonstrated the potential for estrogen receptor modulators decreasing the breast cancer risk in otherwise high risk women. There are currently many estrogen receptor modulators under development. Despite the extensive data collected on these agents, it is difficult to directly assess the effect of estrogen or SERM’s on the breast. There has been data indicating that enhancement of benign breast tissue is sensitive to hormonal variation of the menstrual cycle (Kuhl et al.) This research represents a retrospective study of patients treated with tamoxifen to determine if there are differences in enhancement when compared to historical controls.

Methods: A retrospective review of our breast MRI database reveals 31 patients that underwent breast MRI between 1995 and 1998 while taking chronic tamoxifen therapy. All patients underwent MRI at 1.5 Tesla on a GE Signa Horizon echo speed scanner. Three-dimensional fat-suppressed spoiled gradient echo images were obtained over a 512 x 256 x 32 matrix at 90 second intervals before and after the intravenous injection of 20cc of gadolinium DTPA. Clinical data, MRI reports, and pathologic reports were reviewed in all cases. The results were compared to a similar group of patients not on tamoxifen.

Results: The indications for MRI included a suspicious palpable or mammographic finding (23), biopsy proven cancer (2), and high risk screening protocol (9). MRI findings included ductal enhancement in one women, mild regional enhancement one women, and focal mass enhancement in 6 women. The remaining women demonstrated no enhancement within their breast. No cancer was identified in patients that did not demonstrate enhancement on MRI. Of the 6 patients with focal enhancement, 5 demonstrated cancer at pathologic analysis. One case of minimal focal mass enhancement (less than 10% over initial signal intensity on delayed scans) revealed hyperplastic change. Infiltrating ductal carcinoma was demonstrated in the patient with ductal enhancement on MRI. One case of regional enhancement revealed hyperplastic change at pathology. This is compared to a similar control cohort where approximately 79% of patients demonstrate enhancement on MRI, including 63% of the benign lesions.

Conclusions: Our experience with breast MRI in patients on Tamoxifen therapy reveal that carcinoma continues to enhance on Tamoxifen therapy. There were no false negative MRI studies. Although this is a selective patient population, the incidence of benign enhancing abnormalities appeared much less than typically observed in breast MRI studies. In addition, the intensity of enhancement in these cases of benign disease was barely above background parenchyma.

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