

AbstractID: 10608 Title: Cone beam breast CT versus mammography for breast density measurement

Purpose:

To compare breast density measurements using CBCT with those based on mammograms.

Materials and Methods:

19 mastectomy specimens were imaged with a bench top aSi/CsI flat panel based CBCT system. Scans were performed at 80 kVp with a voxel size of 0.29 mm and an estimated dose level of 24 mGy at the isocenter. The reconstructed images were corrected and segmented to separate glandular tissue from adipose tissue. The voxel numbers for glandular tissue and the entire breast were counted from the segmented images and used to calculate the volume based breast density. The breast density was also calculated based on mammograms using a commercial software package. The number of pixels for dense tissue regions was counted and divided by that for the entire breast to compute the area based breast density. These two breast densities were used for comparison. The volume based breast densities were also converted into BI-RADS categories for comparison with those from mammographic reading as recorded in the diagnostic report.

Results:

The volume based breast densities were mostly equal or lower than the mammographic ones (fig. 1 and Table 1) with a correlation (coefficient = 0.73) between the two. Comparison based on the BI-RADS categories, more breasts with volume based measure were classified as categories 1 and 2 while most breasts with mammographic reading were classified as category 3 (Fig. 2) with a correlation coefficient of 0.55.

Conclusion:

It was found that breast densities calculated from CBCT images were significantly lower than those from mammograms for the 19 patients studied. Implication to the use of CBCT breast density as a risk factor for breast cancer remains to be investigated.

This work was supported in part by grants CA104759 and CA124585 from NIH-NCI, a grant EB00117 from NIH-NIBIB, and a subcontract from NIST-ATP.