

BREAST FAT: SHEAR-WAVE ELASTICITY MEASUREMENTS.

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Background: The fatty tissue of the breast is commonly used as a reference for assessing relative strain, but its normal variation has not been documented.

Aims: To measure the elasticity of breast fat using shear-wave elastography (SWE) in women of different ages.

Methods: SWE was performed on 1000 women in the multicenter BE1 study of breast masses; measurements of the subcutaneous fat adjacent to the lesion in kPa were made using SWE on a prototype of the Aixplorer system (Supersonic Imagine, Aix-en-Provence, France). The values were compared with the patients' age and with the type of pathology (benign or malignant).

Results: The mean age of the patients was 52.1 (SD ±14.8, range 21.2–95.3). The mean elasticity value was 14.0 kPa (SD ±10.3, range 0.03–122.7). The mean values ranked against the patients' age by decade were: 20-30: 11.6; 30-40: 12.1; 40-50: 14; 50-60: 14.3; 60-70: 15.5; 70-80: 14.2; >80: 17 kPa. Fat in the patients with benign masses had a mean elasticity of 13.1kPa while in the malignant group, the mean value was 15.6kPa.

Conclusions: This is the first quantitative assessment of the stiffness of breast fatty tissue. The elasticity varied little with age or pathology, supporting the use of fat stiffness as a comparator.

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References: 1 Tanter M, Bercoff J, Athanasiou A, Deffieux T, Gennisson JL, Montaldo G, Muller M, Tardivon A and Fink M, Quantitative assessment of breast lesion viscoelasticity: initial clinical results using supersonic shear imaging. *Ultrasound Med Biol*, 2008. 34(9): p. 1373-86.

Figure: Scatterplot of mean SWE values of breast fat in kPa versus patient age.

Average Fat E Mean

