TITLE: Comparison between magnetic resonance imaging and ultrasonography as the best examination to measure malignant breast tumors in the surgical planning

AUTHORS: André J. R. E. Rossi[1], Ana C. G. Kluthcovsky[2], Mario R. M. Netto[3], Fábio P. Mansani[3].
(1) .Academic Medicine UEPG; (2) PhD / Teacher UEPG. (3) Master / Teacher UEPG
INSTITUTIONS: State University of Ponta Grossa / Department of Medicine

Purpose

- To evaluate which exam, ultrasonography (USG) or magnetic resonance imaging (MRI), is the most accurate tool to measure malignant breast tumors in the surgical planning, according to the hormonal status of women.

Methods

- Descriptive, cross-sectional study in an online medical records system.
- 39 patients who underwent MRI and USG to assess tumor size prior to surgical treatment .
- Comparison of the largest tumor dimension seen in the MRI and USG prior to excision, with the largest dimension seen in the anatomopathological report (AP).
- Sample was divided according to hormonal status: premenopausal, postmenopausal + HRT, and postmenopausal without HRT.
- It was evalueated which of the exams came closer to the size of the tumor AP measurement by means of the Pearson correlation coefficient (r)
- Correlations were classified as: insignificant (r <0.3), weak (0.3 <r <0.5), moderate (0.5 <r <0.7), strong (0.7 <r <0.9), or very strong (r> 0.9). Significant when p <0.05.
- Exclusion: neoadjuvant chemotherapy or compromised surgical margins on AP

Summary of Results

- All patients had invasive ductal carcinoma (IDC)
- Size of the subgroups according to hormonal status and anatomopathological stages are shown in Tables 1 and 2.

TABLE 1. SAMPLE ACCORDING TO HORMONAL STATUS

HORMONAL STATUS	SAMPLE SIZE
PREMENOPAUSAL	19 (48,7%)
POSTMENOPAUSAL + HRT	10 (25,6%)
POSTMENOPAUSAL WITHOUT HRT	10 (25,6%)
TOTAL	39 (100%)

TABLE 2. STAGING ACCORDING TO ANATOMOPATHOLOGICAL REPORT

STAGING	NUMBER OF CASES
T1	28 (71,8%)
T2	10 (25,6%)
T3	1 (2,5%)
T4	0 (0%)

- Total sample (n = 39): correlation between USG and AP was higher than the correlation between MRI and AP.
- Premenopausal (n = 19): correlation between USG and PA was lower than the correlation between MRI and AP
- Postmenopausal + HRT (n = 10): correlation between USG and AP was higher than the correlation between MRI and AP.
- Postmenopausal without HRT (n = 10): correlation between USG and AP was higher than the correlation between MRI and AP.

TABLE 3. CORRELATION BETWEEN IMAGING EXAMS (USG AND MRI) WITH THE AP, ACCORDING TO HORMONAL STATUS

HORMONAL STATUS	CORRELATION BETWEEN THE EXAMS		BEST EXAM
	USG x AP	MRI x AP	
TOTAL (n=39)	STRONG r=0,73 p<0,001	MODERATE r=0,57 p<0,001	USG
PREMENOPAUSAL	WEAK r=0,46 p=0,05	MODERATE r=0,56 p=0,01	MRI
POSTMENOPAUSAL + HRT	VERY STRONG r=0,93 p<0,001	STRONG r=0,82 p<0,01	USG
POSTMENOPAUSAL WITHOUT HRT	MODERATE r=0,67 p=0,03	WEAK r=0,32 p=0,37	USG

Conclusions

- In the general population : USG is adequate for the pre-surgical evaluation of tumor size in ICD.
- Similar results were found in the groups of postmenopausal women, regardless of whether they performed or not HRT.
- Premenopausal: MRI is the exam that shows the highest correlation with the actual size of the tumor.
- As MRI is more expensive and less available, this exam should not be indiscriminately requested for any patient with ICD, being better indicated for premenopausal patients who are able to perform it.