Interobserver comparative study of the breast density

Poster No.: C-1955
Congress: ECR 2016
Type: Scientific Exhibit
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Keywords: Observer performance, Normal variants, Computer Applications-3D, Mammography, Digital radiography, Veins / Vena cava, Breast, Anatomy, Image verification
DOI: 10.1594/ecr2016/C-1955

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Aims and objectives

Mammography represents the gold standard in diagnostic of malignant breast lesions. It has also been the fundamental diagnostic method in the screening of the breast cancer for several decades.

Mammographic density represents the relative amounts of the glandular tissue and fat in the breast on the mammogram. High density in the breast is a risk factor per se for development of breast cancer and an important limiting factor in interpretation of mamograms. High density can lead to false-negative results, where the existing malignant lesion is missed to be diagnosed. As well, it can often lead to false-positive result, where some other abnormality in breast tissue is taken for malignant. Both results lead to anxiety, stress and physical discomfort of the patient.

The aim of this study is to assess interobserver variability in classification of the breast structure according to ACR-BIRADS lexicon. This was done among three readers (reader-1, experienced radiologist; reader-2, radiology resident; reader-3, software incorporated in mammographic unit).

Methods and materials

We compared ACR patterns of density for bilateral mammograms in 500 asymptomatic women (overall of 1000 mammograms), with final diagnosis BIRADS 1-2.

The research was done on Oncology Institute of Vojvodina, using Selenia Dimensions Hologic mammography unit. All the breasts were first classified as ACR A-D, according to ACR- BIRADS lexicon. Category A was given to completely fatty breasts (less than 25% of volume is fibrogladular tissue), B for the amount of fibroglandular tissue of 25-50%, C for the amount of fibroglandular tissue of 50-75% and D was given to dense breasts, with the volume of fibroglandular tissue exceeding 75% of the breast volume.

All the breasts were afterwards grouped as "non-dense" (A, B) and "dense" (C, D) breasts.

Statistic analysis was performed using Kappa test.

Results
Comparison of reader-1 and reader-3 findings showed high level of agreement (94%, kappa value 0.880) after grouping, and good agreement (71%, kappa value 0.630) before grouping, when we observed each ACR category separately.

Reader-1 overestimated density in 6% of breasts compared to software, with no cases of underestimation.

Comparison of findings between reader-1 and reader-2, reader-2 and reader-3, showed low level of agreement both in separate and grouped mammograms.

**Conclusion**

Our results showed that the experience of radiologist is of an utmost importance in evaluation of the breast density, resulting in high level of agreement with the software (taken as a gold standard).

The estimation of breast density is important because interpretation of mammograms in dense breasts often leads to both false negative and false positive findings, delaying treatment or causing physical and psychological discomfort, anxiety and stress.

The cases of "dense" mammograms often need additional diagnostics (ultrasound, MRI, biopsy), especially at the first mammograming, since there is no possibility of observing the lesion over time.

Every radiologist should bear these facts in mind when examining the breast categorized as dense.

**Personal information**

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**References**


