Sensitivity and specificity of unilateral edema on T2w-TSE sequences in MR-Mammography considering 974 histologically verified lesions.

The objective of this investigation was to determine the diagnostic value of unilateral edema in differentiating benign from malignant breast disease on T2w-TSE images in MR-Mammography (MRM). All patients from a 10-year period undergoing surgery in the same institution after having received MRM in our department were included in this prospective analysis of previous acquired examinations. To eliminate bias caused by prior procedures, all patients having had biopsy, operation, radiation therapy, or chemotherapy before MRM were excluded. T2w-TSE images were acquired after a dynamic contrast-enhanced series of T1-weighted images in a standardized examination protocol (1.5 T). Edema was defined as a high-signal intensity on T2w-TSE images and it was categorized as absent, perifocal, or diffuse. Examinations were rated by two experienced observers blinded to all procedures and results following MRM. In cases of disconcordance, the opinion of a third radiologist decided. Statistical testing included Pearson's Chi-squared test and Fisher's exact testing. A total of 1,010 patients with a mean age of 55 years (SD: 11.6 years, range: 16-87 years) with 1,129 histologically verified lesions were included in this investigation. After removing all patients with prior procedures from the patient collective, 974 lesions were left for statistical analysis. Perifocal edema was highly
significantly (p< 0.001) associated with malignant disease, leading to a sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) of 33.5%, 93.9%, 89.6, and 57.1%, respectively. Unilateral edema in general showed the following diagnostic parameters: sensitivity 53.0%, specificity 80.5%, PPV 80.9%, and NPV 52.3%. Edema seems to be associated with malignancy in the majority of cases. Especially, specificity and PPV were found to be high. These findings may be helpful in diagnostic decisions on otherwise equivocal cases.