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Magnetic resonance study of the breast: Diffusion sequence analysis

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Objective: The objective of this study was to evaluate the role of the diffusion sequence and respective apparent diffusion coefficient (ADC) map in the study of the breast by magnetic resonance imaging (MRI). **Methodology:** This is a retrospective cross-sectional study to evaluate additional breast MRI scan sequences. The study included exams of women with indication for MRI referred, by spontaneous demand, to a private supplementary health imaging diagnostic service in the city of Goiânia, GO, from July 2021 to January 2022. The sample was divided according to the BI-RADS® classification into two groups, one with low suspicion for classifications 1, 2, and 3 and another with high suspicion for classifications 0, 4, 5, and 6. The distribution of the sample profile in patients with BI-RADS® MRI low suspicion and high suspicion was tested by applying Pearson's chi-square test, relative frequency, and absolute frequency. Data were analyzed using the Statistical Package for Social Science (IBM Corporation, Armonk, USA) version 26.0 with a significance level of 5% ($p<0.05$). This study was approved by the research ethics committee. **Results:** A total of 307 exams of women with indications for breast MRI participated in the study. Of the exams analyzed, the prevalent clinical indication (33.3%) on images with restriction was a breast lump. Fifty-seven (18.6%) of the exams presented restriction to diffusion with confirmation on the ADC map in the values of b50, b400, and b800. The distribution of the diffusion sequence result in relation to the BI-RADS® MRI low suspicion and high suspicion showed that water restriction was concordant ($p<0.01$), occurring in 82% of the cases of high suspicion. **Conclusion:** Diffusion contributes with additional data about images of high suspicion by standard MRI.

Keywords: breast; diffusion; magnetic resonance.