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بعض الوثائق الأصلية تالفة

بالرسالة صفحات
لم ترد بالأصل

Diffusion-weighted whole-body imaging with background body signal suppression (DWIBS) in detection and characterization of neoplastic breast lesions

Thesis

Submitted for Partial Fulfilment of M.D. degree in ***Radiodiagnosis***

By

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الاية (١١٤)

صَدَقَ اللهُ العَظِيم

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the Most Kind and Most Merciful.

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Yahya Eltaher Elshaikh

ABSTRACT

Background: Breast cancer is a major health problem in women and early detection is of prime importance.

Objective: We aimed to evaluate the role of diffusion-weighted whole-body imaging with background body signal suppression (DWIBS) in detection of breast lesions and characterization of these detected lesions.

Materials and methods: 40 female patients with clinically suspicious 50 breast lesions detected by sonomammography, in addition to the routine protocol that includes T1Wi's, T2Wi's, STIR, DCE-MRI, DWI sequences (with ADC maps) all the participants underwent DWIBS sequence (with ADC maps).The histopathology served as reference standard. First, we compared the detectability of breast lesions on DWIBS with that of the DWI. We then compared the ADCs of the malignant lesions (n=35) to that of the benign lesions (n=15) in both DWI and DWIBS.

Results: Thirty seven lesions were detected via DWIBS (detectability of 74.0%) was less than that of DWI (detectability of 78.0%). In DWIBS, the mean ADC value of the malignant lesions ($0.80 \pm 0.27 \times 10^{-3} mm^2/s$) was significantly lower than that of the benign lesions ($1.40 \pm 0.41 \times 10^{-3} mm^2/s$). With a cut-off value of $1.3 \times 10^{-3} mm^2/s$ for ADC, DWIBS achieved 85.7% sensitivity and 80% specificity for differentiating between benign and malignant lesions.

Conclusion: Although it showed lower detectability for breast lesions than DWI, our study suggests that DWIBS is superior to DWI in the visualization of malignant breast lesion. Also based on ADC, DWIBS provides additional information that may further increase the specificity of breast lesion characterization.

KEY WORDS

Breast cancer-DWIBS- Suspicious breast lesions-Accuracy.

Dedication

Words can never express my sincere thanks to ***My Family and My Loving Wife*** *for their generous emotional support and continuous encouragement, which brought the best out of me. I owe them all every achievement throughout my life.*

I would like to express my everlasting gratitude to all ***My Professors, Colleagues and Friends****, so many of them influenced, encouraged and inspired me throughout the years. I wish them the best of all.*

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List of Abbreviations

Abb.	Full term
ACR	American Cancer Society
ADC	Apparent diffusion coefficient
AUC	Area under the enhancement curve
BI-RADS	Breast imaging reporting and data system
BRCA gene	Breast cancer gene
CE-MRI	Contrast enhanced magnetic resonant imaging
CNR	Contrast to noise ratio
DCE-MRI	Dynamic Contrast enhanced magnetic resonant imaging
DCIS	Ductal carcinoma in situ
DWI	Diffusion weighted image
DWIBS	Diffusion weighted whole-body imaging with background body signal suppression
DW-MRI	Diffusion-weighted magnetic resonance imaging
FCCs	Fibrocystic changes
FLASH	Three dimensional fast angle low shot gradient echo
FOV	Field-of-view
Gd-DTPA	Gadolinium diethylene triamine penta aceticacid
HRT	Hormone Replacement Therapy
ILC	Infiltrating lobular carcinoma
LCIS	Lobular carcinoma in situ
LIQ	Lower Inner Quadrant
LOQ	Lower Outer Quadrant
LVI	Lymphovascular invasion
MIP	Maximum intensity projection
MMCM	Macromolecular contrast media
MRA	Magnetic resonance angiography
MRM	Magnetic Resonance Mammography

List of Abbreviations Cont...

Abb.	Full term
NOS	Not otherwise specified
PPV	Positive predictive value.
ROI	Region of interest
RSL	Radial scelerosing lesion
TDLU	Terminal Ductal Lobular Unit
UIQ	Upper Inner Quadrant
UOQ	Upper Outer Quadrant

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