The Role of MRI in Evaluation of Ductal Carcinoma in Situ in Female Breast

Essay

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Noha Abd Al-Kader Ali Mohamed Seif


بسم الله الرحمن الرحيم
قالُوا سُبْحَانكَ لاَ
عِلمَ لَنَا إِلاّ ما
عَلّمْتَنَا إِنَّكَ أَنتَ
الْعَلِيمُ الْحَكِيم
صدق الله العظيم
سورة البقرة آية (٣٢)

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List of Abbreviations

Abb.	Stands for
ACR	American College of Radiology
ADC	Apparent diffusion coofficient
BCT	Breast conservation therapy
BIRADS	Breast Imaging Reporting and Data System
Cho	Choline
CC	Cranio coudal
DWI	Diffusion weighted imaging
DCIS	Ductal carcinoma in situ
DCE-MRI	Dynamic contrast enhanced MRI
EPI	Echo planner imaging
FOV	Field of view
IV	Intra venous
IDC	Invasive ductal carcinoma
ILC	Invasive lobular carcinoma
LCNB	Large core-needle biopsy
LCIS	Lobular carcinoma in situ
MRI	Magnetic resonance imaging
MRS	Magnetic resonance spectroscopy
MG	Mammography
MIP	Maximum intensity projection
MLO	Medio lateral oblique
NMLE	Non mass like enhancement
NOS	Not otherwise specified
P	Peak

List of Abbreviations (Cont...)

Abb.	Stands for
PRESS	Point-resolved spatially localized spectroscopy
ROI	Region of interest
SVS	Single voxel spectroscopy
SNR	Sound to noise ratio
SI	Spectroscopic imaging
STEAM	Stimulated echo acquisition mode
tCho	Total choline
US	Ultra sound
VAB	Vacuum- assisted biopsy

INTRODUCTION

Ductal carcinoma in situ (DCIS) is histologically not considered as a single entity, but as a heterogeneous group of lesions that differ in their histopathologic features, growth pattern, clinical presentation and biological behavior. Before the advent of widespread mammographic screening, DCIS was rarely detected and accounted for only 0.8%-5.0% of all breast cancers. With the introduction of mammographic screening, DCIS accounted for 15-20% of all detected breast cancers, and for 25%-56% of all clinically occult cancers ***(Stomper, 2013).***

Although the detection of DCIS has increased with the advent of widespread mammography screening, it is essential to have a more accurate assessment of the extent of DCIS for successful breast conservation therapy. Recent studies evaluating the detection of DCIS with magnetic resonance (MR) imaging have used high spatial resolution techniques and have increasingly been performed to screen a high-risk population as well as to evaluate the extent of disease ***(Lehman et al., 2011).***

DCIS may have variable morphologic features on MR images, with non-mass enhancement morphology being the most common manifestation. Less commonly, DCIS may also manifest as a mass on MR images, in which case it is most likely to be irregular ***(Yamada et al., 2011).***

The role of MRI in patient known to have ductal carcinoma in situ is to assess residual disease, occult invasion, and multicentricity ***(Esserman et al., 2011).***

Additional MR imaging tools such as diffusion-weighted imaging and quantitative kinetic analysis combined with the benefit of high field strength, may increase the sensitivity and specificity of breast MR imaging in the detection of DCIS ***(Mossa-Basha et al., 2012).***

The breast imaging allows a standardized and consistent description of the morphologic and kinetic characteristics of breast lesions; however, there are many challenges in the interpretation of breast enhancement patterns and kinetics, and many imaging and interpretation pitfalls must be considered. New breast MR imaging techniques that are based on the use of molecular markers of malignancy may help improve lesion characterization ***(Ikeda et al., 2011).***

AIM OF THE WORK

Evaluation of the role of magnetic resonance imaging in detection and follow up of ductal carcinoma in situ in female breast.