Role of proton MR-spectroscopy in predicting the response of locally advanced breast cancer to neoadjuvant chemotherapy

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Abstract

Most patients with locally advanced breast cancer(LABC) will require a modified radical mastectomy, a procedure that remains the standard surgical treatment for operable locally advanced disease.

Less extensive surgeries are being increasingly explored with the use of neoadjuvant chemotherapy (NACT). The down-staging of tumors seen in these cases not only makes them operable but also, on many occasions can be considered for breast conservative therapy (BCT).

Neoadjuvant chemotherapy, is performed prior to breast cancer surgery and offers several advantages over standard postoperative chemotherapy. It is important to know early; if the drug chosen will be effective or not.

Recently hydrogen 1 (H1) MR spectroscopy is used to detect and monitor breast cancer through measuring tCho concentration and so predicting response to chemotherapy as early as 24 hours .

Key wards : **magnetic resonance spectroscopy (MRS)- predict response – locally advanced breast cancer- neoadjuvant chemotherapy**

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A

AC	Anthracyclin
ACR	American Joint Committee on Cancer
ADC	Apparent Diffusion Coefficient
AJCC	American College of Radiology
ALND	Axillary lymph node dissection

B

BCT	Breast Conservative Therapy
BCS	Breast-Conserving Surgery
BMRI	Breast Magnetic resonant Imaging
BI-RADS	Breast Imaging Reporting And Data System
BRCA1	is a human caretaker gene that produces a protein called breast cancer type 1 susceptibility protein
BRCA2	is a human caretaker gene that produces a protein called breast cancer type 2 susceptibility protein
B0	Main Magnetic Field

C

CAD	Computer-Aided Detection
CE-BMRI	Contrast- Enhanced Breast Magnetic Resonance Imaging
CHESS	Chemical Shift Selective Saturation
CMF	Cyclophosphamide, Methotrexate, And 5-Fluorouracil Chemotherapy
CSI	Chemical-Shift Imaging
CT	Computed Tomography
CTX	Chemotherapy
CXR	Chest Radiograph

D	
2D	Two- Dimensional
3D	Three – Dimensional
DCE-MRI	Dynamic Contrast-Enhanced Magnetic Resonance Imaging
DCIS	Ductal Carcinoma In Situ
3DFT	3D Fourier Transform
2DFT	2D Fourier Transform
E	
EBCTCG	Early Breast Cancer Trialists' Collaborative Group
ER	Estrogen Receptor
F	
FLASH	Fast Low-Angle Shot
FID	Free Induction Decay
FSE	Fast Spin Echo
G	
Gd-DTPA	Gadolinium-DiethyleneTriaminePentaacetic Acid
GPC	Glycerophosphocholine
GRCC	Glycogen-Rich Clear Cell Carcinoma
H	
^{1}H	Proton
H&E	Hematoxylin and Eosin Stain
HER2-	human epidermal growth factor receptor 2-Negative
^{1}H MR	Proton Magnetic resonance
HR+	Endocrine Receptor–Positive

I	
IAC	Invasive Apocrine Carcinoma
IBTR	Ipsilateral Breast Tumor Recurrence
IBC	Inflammatory breast cancer
IDC	invasive ductal carcinoma
ILC	invasive lobular cancer
L	
LABC	Locally Advanced Breast Cancer
LCIS	Lobular Carcinoma In Situ
LR	Local Recurrence
M	
M	Distant Metastasis
MCA	Mucinous Cystadenocarcinoma
MIP	Maximum intensity projection
MR	Magnetic Resonance
MRI	Magnetic Resonance Imaging
MRS	Magnetic Resonance Spectroscopy
MS	Mammography Screening
N	
NACT/NAC	Neoadjuvant Chemotherapy
NOS	Invasive Duct Carcinoma Not Otherwise Specified