THE CLINICAL UTILITY OF DIFFUSION WEIGHTED IMAGING (DWI) IN BREAST MRI: A PICTORIAL REVIEW

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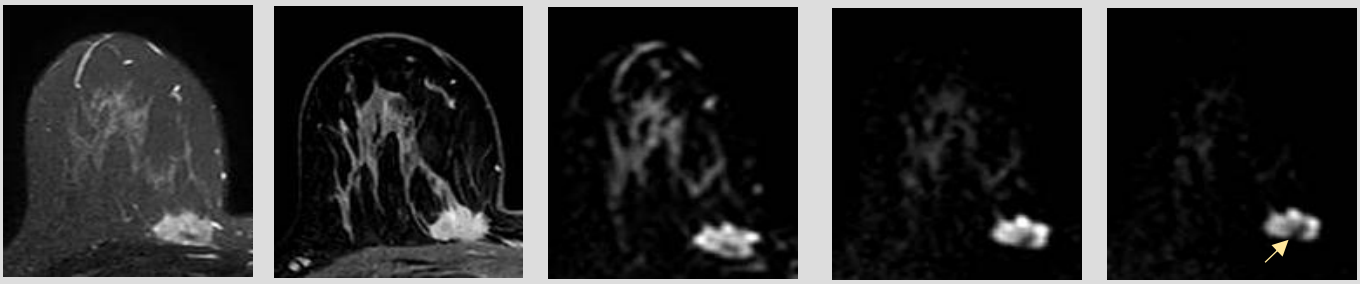
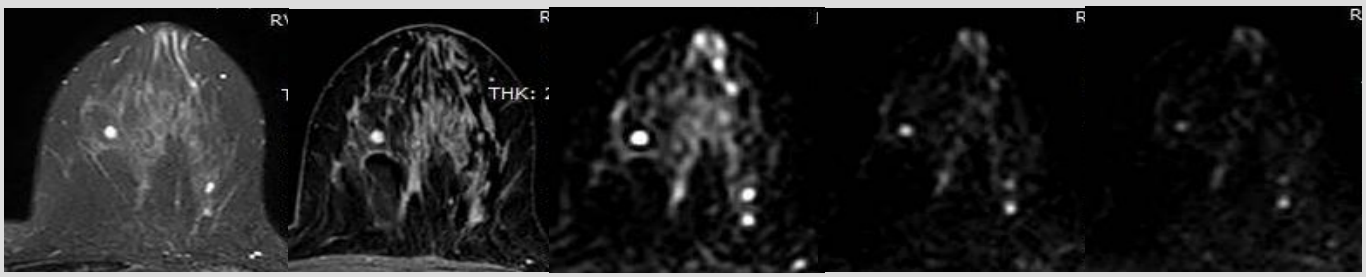
Case 1: Right Grade 3 triple negative invasive carcinoma of no special type (NST) (Philips Ingenia 3T)



T2 | Late dynamic | DWI (b=0) | DWI (b=800) | DWI (b=1150)

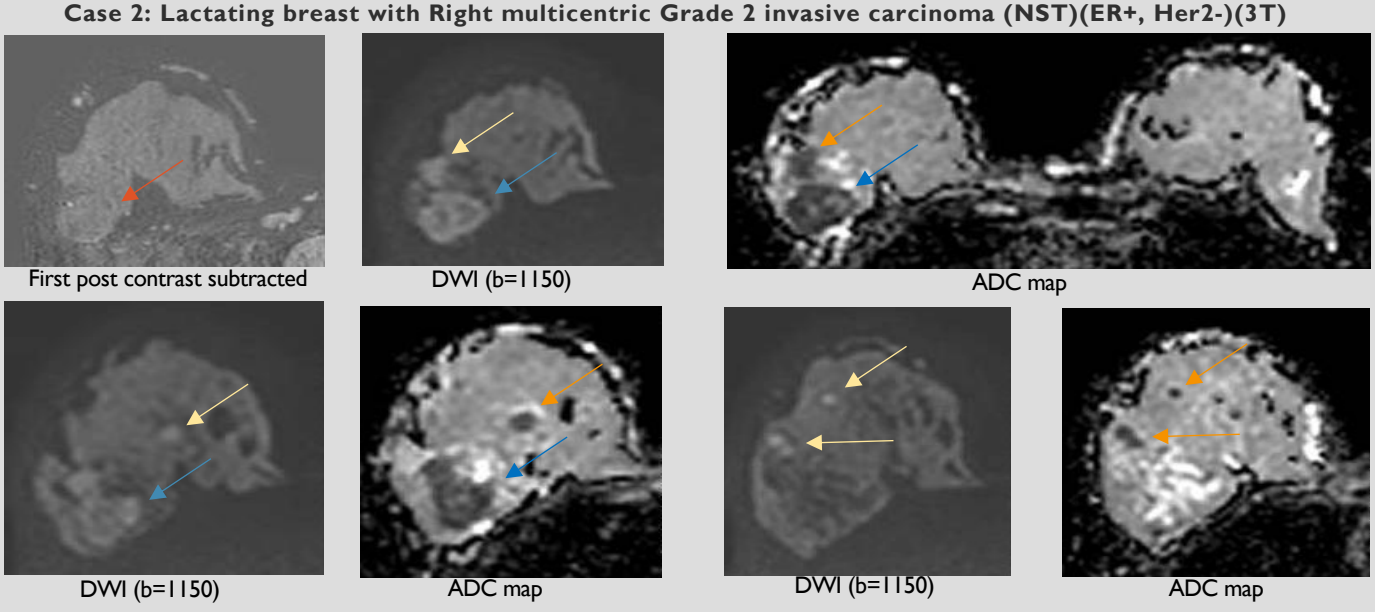
Case 1: Contralateral breast (Left) medial fibroadenoma + lateral cyst (Philips Ingenia 3T)



T2 | Late dynamic | DWI (b=0) | DWI (b=800) | DWI (b=1150)

Case 1: Top row: Grade 3 cancer in right breast: High b value DWI images show irregular morphology and central necrosis (yellow arrow) better than late dynamic image. Note high signal on T2 in this aggressive cancer. Background normal glandular tissue is suppressed at the highest b value. **Second row:** Contralateral benign fibroadenomata in medial and lateral left breast are less visible on high b value image (b=1150) whilst left breast posterior, lateral cyst shows as high signal on all DWI images of all b values.

Case 2: Lactating breast with Right multicentric Grade 2 invasive carcinoma (NST)(ER+, Her2-)(3T)



First post contrast subtracted | DWI (b=1150) | ADC map

DWI (b=1150) | ADC map | DWI (b=1150) | ADC map

Case 2: Top row: Palpable, mammo-occult, Grade 2 cancer in lateral right lactating breast: Marked background parenchymal enhancement, even early in dynamic sequence, obscures the cancer on conventional subtracted dynamic breast MRI (red arrow). DWI images at high b values demonstrate the palpable cancer (blue arrow) and also extensive multicentricity as high signal (yellow arrows). **Top and second row:** Apparent diffusion coefficient (ADC) map shows the multifocality clearly as low signal (orange arrows).

Diffusion weighted imaging (DWI) is a non-contrast, functional MRI technique that essentially provides a pictorial map of tissue cellularity. It has the potential for clinical utility in breast MRI by providing diagnostic quality images of breast cancer without the need for gadolinium containing contrast enhancement. It is particularly useful for women with pregnancy-associated breast cancer.

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