



وَقُلْ اَعْمَلُوا فَسَيَرَى اللّٰهُ  
عَمَلَكُمْ وَرَسُولُهُ وَالْمُؤْمِنُونَ





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*Zahraa Adnan*



**To my  
Husband and  
my Husband's father**

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## List of Abbreviations

|                |                                                                |
|----------------|----------------------------------------------------------------|
| <b>-2D</b>     | .....Two dimensions                                            |
| <b>ACC</b>     | ..... Adenoid Cystic Cancer                                    |
| <b>ACR</b>     | .....American Cancer Society                                   |
| <b>ADC</b>     | .....Apparent diffusion coefficient                            |
| <b>ALND</b>    | .....Axillary lymph node dissection                            |
| <b>ANDI</b>    | .....Aberration of normal development<br>and involution        |
| <b>AUC</b>     | .....Area under the enhancement curve                          |
| <b>BIRADS</b>  | .....Breast imaging reporting and data<br>system               |
| <b>CNR</b>     | .....Contrast to noise ratio                                   |
| <b>DCE-MRI</b> | .....Dynamic contrast enhanced MRI                             |
| <b>DCIS</b>    | .....ductal carcinoma in situ                                  |
| <b>DWI</b>     | .....Diffusion weighted images                                 |
| <b>EPI-DW</b>  | .....Echo planar imaging diffusion<br>weighted pulse sequence. |
| <b>FCC</b>     | .....Fibrocystic changes                                       |
| <b>FFE</b>     | ..... fast field echo                                          |
| <b>Fig.</b>    | ..... Figure                                                   |
| <b>FLASH</b>   | .....Three-dimensional fast low angle<br>shot sequence         |
| <b>FNAC</b>    | .....Fine needle aspiration cytology                           |
| <b>FOV</b>     | .....Field of vision                                           |
| <b>Gd</b>      | .....Gadolinium                                                |
| <b>Gd-DTPA</b> | .....Gadolinium diethyl-netriamine-<br>pentaacetic acid        |
| <b>HRT</b>     | ..... Hormone Replacement Therapy                              |
| <b>IBC</b>     | .....Inflammatory breast cancer                                |
| <b>IDC</b>     | .....invasive ductal carcinoma                                 |

## List of Abbreviations (Cont.)

|                   |                                                              |
|-------------------|--------------------------------------------------------------|
| <b>ILC</b> .....  | Invasive lobular carcinoma                                   |
| <b>IV</b> .....   | Intravenous                                                  |
| <b>LCIS</b> ..... | Lobular carcinoma in situ                                    |
| <b>MBG</b> .....  | Motion Probing Gradient                                      |
| <b>MCB</b> .....  | Mucinous Cancer of Breast                                    |
| <b>MIP</b> .....  | Maximum intensity projection                                 |
| <b>mm</b> .....   | Millimeter                                                   |
| <b>MPR</b> .....  | Multiplanar reconstruction                                   |
| <b>MT</b> .....   | mixed tubular cancer                                         |
| <b>NOS</b> .....  | Not Otherwise Specified                                      |
| <b>NPV</b> .....  | Negative predictive value                                    |
| <b>PASH</b> ..... | Pseudo      Augmentous      Stromal<br>Hyperplasia of Breast |
| <b>PCR</b> .....  | Pathological complete response                               |
| <b>PPV</b> .....  | Positive predictive value                                    |
| <b>PT</b> .....   | Pure Tubular Cancer                                          |
| <b>RARE</b> ..... | Rapid acquisition with relaxation<br>en-hancement            |
| <b>RF</b> .....   | Radio frequency                                              |
| <b>ROC</b> .....  | Receiver Operator Characteristics                            |
| <b>ROI</b> .....  | Region of interest                                           |
| <b>RSL</b> .....  | Radial Sclerosing Lesion                                     |
| <b>SER</b> .....  | Signal enhancement ratio                                     |
| <b>SLN</b> .....  | Sentinel Lymph Node                                          |
| <b>SLNB</b> ..... | sentinel lymph node biopsy                                   |

## **List of Abbreviations (Cont.)**

|             |       |                                            |
|-------------|-------|--------------------------------------------|
| <b>SNR</b>  | ..... | Signal to Noise Ratio                      |
| <b>SSE</b>  | ..... | Full Spin-echo Signal                      |
| <b>STIR</b> | ..... | Short Inversion Time Inversion<br>Recovery |
| <b>TDLU</b> | ..... | Terminal ductal lobular unit               |
| <b>TE</b>   | ..... | Echo Time                                  |
| <b>TR</b>   | ..... | Repetition Time                            |
| <b>TSE</b>  | ..... | Turbo Spin-Echo                            |
| <b>WATS</b> | ..... | water selective excitation technique       |

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## **INTRODUCTION**

The majority of the lesions that occur in the breast are benign, benign lesions of the breast are more frequent than malignant ones. It is important to recognize benign lesions and distinguish them from breast cancer (*Guray and Sahin, 2006*).

Breast cancer is the most common female neoplasm (31% of tumors in females), and the second-leading cause of death among women. Breast lesions were first classified as malignant or benign categories (*Catalano et al., 2009*). Further, the increasing rate of breast cancer continues to be a major area of concern for both clinicians and researchers. Increased awareness in the affected population leads to more frequent physical examinations and diagnostic imaging procedures which results in earlier diagnosis and hence improved prognosis (*Guo et al., 2002*).

Mammography has been proven to detect breast cancer at an early stage; other screening technologies also may contribute to the earlier detection of breast cancer, particularly in women under the age of 40 years for whom mammography is less sensitive such as breast ultrasound or MRI (*Saslow et al., 2007*).

Breast ultrasound examination has been used for years as an adjunct to mammography for evaluating