



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكرو فيلم

بسم الله الرحمن الرحيم



HANAA ALY



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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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HANAA ALY



Role of Dual Energy Contrast Enhanced Mammography in Characterization of Lesions in Edematous Breast

Thesis

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In Radiodiagnosis*

Presented by

Basma Ahmed Hassanien Ahmed
Bachelor of Medicine and Surgery

Under supervision of

Prof. Dr. Sherine Kadry Amin
*Professor of Radiodiology
Faculty of Medicine, Ain Shams University*

Assist. Prof. Dr. Rasha Salah Eldin Hussein
*Assistant Professor of Radiodiology
Faculty of Medicine, Ain Shams University*

Faculty of Medicine - Ain Shams University

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قالوا

سببنا انك لا تعلم لنا
إلا ما علمتنا إنك أنت
العليم العظيم

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List of Abbreviations

Abb.	Full term
<i>2D</i>	<i>Two –dimensional</i>
<i>3D</i>	<i>Three-dimensional</i>
<i>ACR</i>	<i>American College of Radiology</i>
<i>AEC</i>	<i>Automatic exposure control system</i>
<i>BI-RADS</i>	<i>Breast Imaging Reporting and Data System</i>
<i>CBS</i>	<i>Conservative Breast Surgery</i>
<i>CC</i>	<i>Craniocaudal</i>
<i>CEDM</i>	<i>Contrast-enhanced digital mammography</i>
<i>CT</i>	<i>Computed tomography</i>
<i>DCIS</i>	<i>Ductal carcinoma in situ</i>
<i>FFDM</i>	<i>Full-field digital mammography</i>
<i>Gd</i>	<i>Gadopentetatedimeglumine</i>
<i>IDC</i>	<i>Invasive Ductal Carcinoma</i>
<i>ILC</i>	<i>Invasive Lobular Carcinoma</i>
<i>KeV</i>	<i>Kilo electron volt</i>
<i>KVp</i>	<i>Peak kilo voltage</i>
<i>LCIS</i>	<i>Lobular carcinoma in situ</i>
<i>MIP</i>	<i>Maximum intensity projection</i>
<i>MLO</i>	<i>Medio-lateral oblique</i>
<i>mm</i>	<i>millimeter</i>
<i>Mo</i>	<i>Molybdenum</i>
<i>MRI</i>	<i>Magnetic resonance imaging</i>
<i>MRM</i>	<i>Modified Radical Mastectomy</i>
<i>MX</i>	<i>Mammography</i>
<i>NPV</i>	<i>Negative Predictive value</i>
<i>PPV</i>	<i>Positive Predictive value</i>
<i>RT-PCR</i>	<i>Reverse transcriptase polymerase chain reaction</i>
<i>SNR</i>	<i>Signal to noise ratio</i>
<i>TDLUS</i>	<i>Terminal duct lobular units</i>
<i>TNM</i>	<i>Tumor, nodes, metastases</i>
<i>US</i>	<i>Ultrasonography</i>
<i>UIQ</i>	<i>Upper Inner Quadrant</i>
<i>UOQ</i>	<i>Upper Outer Quadrant</i>

INTRODUCTION

Breast cancer is the most common type of cancers being diagnosed in women and the most common cause of death from cancer in women (*Swart, 2010*).

Edema of the breast can be resulted from multiple pathological processes either from benign or malignant diseases. It may occur with local causes such as inflammatory breast carcinoma, mastitis, lymphatic obstruction, lymphoma or post radiational changes. Also, it may occur with systemic condition like congestive heart failure, nephritic and nephrotic syndromes of the kidney (*Diekmann et al., 2011*).

Examination of the breast with initial digital mammography and ultrasound are the routine investigations for breast lesions. In mammography, edema can be diagnosed with thickening of the skin, increased parenchymal density and prominent interstitial markings .On the other hand, ultrasound edema pattern diagnosed by marked increase in the skin thickening, increased subcutaneous fat echogenicity with dilated lymphatics that appears as reticular anechoic structure .But both modalities findings still non specific for diagnosis (*An et al., 2011*).

Tumor angiogenesis factors stimulate formation of abnormal vessels that leak and shunt blood. Therefore, imaging methods with contrast medium, can potentially aid in the detection and diagnosis of cancer (*Jong et al., 2003*).

Contrast mammography is found to be an excellent adjavant in our practice. CEDM has been a clinically effective, efficient, and inexpensive tool for evaluating breast tissue and breast cancer. The advancements in this technology have allowed us to utilize one machine for screening, diagnostic evaluation, biopsy, and response to treatment. The cost effectiveness of this technology has been an excellent fit for our practice (*Jochelson et al., 2013*).

Recently, we can have the advantage of digital mammography and other advanced screening applications to get more clinical benefits and save costs to improve standard of health care. Contrast enhanced digital mammography (CEDM), can easily detect tumor angiogenesis also has apriority for malignancy detection when compared with conventional mammography alone. CEDM is a promising diagnostic tool in breast imaging (*Lewis et al., 2017*).