The Role of Digital Breast Tomosynthesis in Reducing false results in Mammography

Essay

Submitted for partial fulfillmentOf M.Sc. Degree in Radiodiagnosis

By

AmaniZakariaAwwadabu el Ezz

(M.B. ,B.Ch.)

Faculty of medicine,Ain shams University

Supervised

Prof.Dr.Sahar Mohamed El-Fiky

Professor of Radiodiagnosis

Faculty of Medicine,Ain Shams University

Dr. ShaimaaAbd El-sattar

Lecturer of Radiodiagnosis

Faculty of Medicine, Ain shams university

Faculty of medicine

Ain shams university

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List of Abbreviations

ACR : ***American College of Radiology***

BI-RADS : ***Breast Imaging Reporting And Data System***

CC : ***CranioCaudal***

CT : ***Computed Tomography***

DBT : ***Digital Breast Tomosynthesis***

DCIS : ***Ductal Carcinoma In Situ***

DES : ***DiEthylStilbestrol***

DM :***Digital Mammography***

FFDM :***Full-Field Digital Mammography***

IDC :***Invasive Ductal Carcinoma***

ILC : ***Invasive Lobular Carcinoma***

LCIS :***Lobular Carcinoma In Situ***

MB : ***Megabyte***

MLO : ***Medio- Lateral Oblique***

PV : ***Projection View***

USFDA : ***United States Food And Drug Adminstration***

W/RH :***W:Tungsten RH: Rhodium***

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Aim of the Work

The aim of this work is to spot the light on the role of DBT in reducing false results in mammography.

Introduction

A mammogram is a breast X-ray that can detect cancer before it's large enough to feel or cause symptoms (**Hubbard et al., 2011**),

The limitations of mammography are well known. Mainly, they include a low positive predictive value and a low sensitivity, these deficits stem largely from the superimposition of normal breast structures in the path of the x ray beam (**Poplack et al., 2007**).

False – negative results occur when mammograms appear normal even though breast cancer is present. Overall, screening mammograms miss up to 20 percent of breast cancers that are present at the time of screening (**National cancer institute, 2010**).

Digital Breast Tomosynthesis has superior sensitivity compared with 2 view two Dimensional Mammography (**Michel et al., 2010**).

The accuracy of DBT has borderline superiority to supplement views in the diagnostic work up of mammographic lesions (**Morel et al., 2011).**

Breast imagers at Penn Medicine are now using digital Breast tomosynthesis, or DBT, to perform three – dimensional mammography for breast cancer screening and diagnosis (**Penn Medicine, 2011**).

The DBT system employs a digital X-ray that records a series of low dose, high resolution images of the breast while traversing a small

(15°) arc around the compressed breast. As the projection angle changes, images are recorded at slightly different depths and thicknesses, from one surface of the breast to the other ***(Penn Medicine, 2011).***

Tomosynthesis provides individual images of thin layers of breast tissue, producing clearer images than conventional mammography with DBT, images are obtained in a similar fashion to act scan, although the rotation of the detector is more limited than the 360 – degree rotation of the C.T. scanner***(Hardy, 2011).***

This also means that DBT captures fewer images than CT. However, the DBT process still provides enough image separation of normal over lapping tissue to detect cancer that may otherwise go undetected ***(Hardy, 2011).***

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Faculty of Medicine,

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دور التصوير بالتوليف الرقمي للرسم السطحي للثدي في تقليل النتائج الخاطئة في التصوير بالأشعة السينية للثدي

دراسة مقدمة من

أماني زكريا عواد أبو العز

بكالوريوس الطب والجراحة

توطئه للحصول على درجة الماجستير في الأشعة التشخيصية

تحت إشراف

الأستاذة الدكتورة / سحر محمد الفقي

أستاذ الأشعة التشخيصية

كلية الطب – جامعة عين شمس

الدكتورة / شيماء عبد الستار

مدرس الأشعة التشخيصية

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