



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكرو فيلم

بسم الله الرحمن الرحيم



MONA MAGHRABY



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شبكة المعلومات الجامعية التوثيق الإلكتروني والميكروفيلم



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التوثيق الإلكتروني والميكروفيلم

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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Value of Diffusion Weighted Magnetic Resonance Imaging in Diagnosis of Cervical Carcinoma

Thesis

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By

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قَالَ

سُبْحَانَكَ لَا عِلْمَ لَنَا
إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ
الْعَلِيمُ الْعَظِيمُ

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List of Abbreviations

Abb.	Full term
<i>1.5/3 T</i>	<i>1.5 or 3 Tesla</i>
<i>ADC</i>	<i>Apparent Diffusion Coefficient</i>
<i>AIs</i>	<i>Adenocarcinoma in situ</i>
<i>BW</i>	<i>Body weight</i>
<i>CE</i>	<i>Contrast Enhanced</i>
<i>CNR</i>	<i>Contrast noise ratio</i>
<i>CT</i>	<i>Computed Tomography</i>
<i>DCE-MRI</i>	<i>Dynamic contrast enhanced magnetic resonance imaging</i>
<i>DES</i>	<i>Diethylstilbestrol</i>
<i>DWI</i>	<i>Diffusion Weighted Image</i>
<i>DW-MRI</i>	<i>Diffusion weighted magnetic resonance imaging</i>
<i>EPI</i>	<i>Echo planner image</i>
<i>FIGO</i>	<i>International Federation of Gynecology and Obstetrics</i>
<i>FOV</i>	<i>Field Of View</i>
<i>FSE</i>	<i>Fast Spin Echo</i>
<i>Gd</i>	<i>Gadolinium</i>
<i>GRE</i>	<i>Gradient Echo</i>
<i>HPV</i>	<i>Human Papilloma Virus</i>
<i>IV</i>	<i>Intravenous</i>
<i>JZ</i>	<i>Junctional Zone</i>
<i>LN</i>	<i>Lymph Node</i>

List of Abbreviations cont...

Abb.	Full term
<i>MRI</i>	<i>Magnetic resonance imaging</i>
<i>RF</i>	<i>Radiofrequency</i>
<i>RF</i>	<i>Radio-Frequency</i>
<i>ROI</i>	<i>Region of Interest</i>
<i>RT</i>	<i>Radiation Therapy</i>
<i>SCC</i>	<i>Squamous cell carcinoma</i>
<i>SCJ</i>	<i>Squamocolomnur junction</i>
<i>SI</i>	<i>Signal Intensity</i>
<i>SIL</i>	<i>Squamous intraepithelial lesion</i>
<i>T stage</i>	<i>Tumour stage</i>
<i>T1WI</i>	<i>T1 weighted image</i>
<i>T2 WI</i>	<i>T2 weighted image</i>
<i>TE</i>	<i>Time to Echo</i>
<i>TR</i>	<i>Time to Repetition</i>
<i>TSE</i>	<i>Turbo Spin Echo</i>
<i>US</i>	<i>Ultrasound</i>

INTRODUCTION

Cervical cancer is the third most common cancer in women worldwide (*Ferlay et al., 2013*).

It remains a leading cause of cancer-related death for women in developing countries (*Solomo et al., 2007*).

In Egypt, cervical cancer ranks as the second most frequent cancer after breast cancer, among women between 15 and 44 years of age (*Mona et al., 2013*).

Conventional MRI has an established role in gynecologic imaging. However, increasing clinical demand for improved lesion characterization and disease mapping to optimize patient management has resulted in the incorporation of newer sequences, such as diffusion-weighted imaging (DWI) (*Freeman et al., 2012*).

This technique is a functional tool that relies on tissue water displacement to create a contrasted image. For correct evaluation and avoidance of pitfalls, the generated images must be interpreted alongside anatomical sequences. The apparent diffusion coefficient (ADC) map is also needed to reduce image misinterpretation (*Sala et al., 2010*).

DWI is a noninvasive technique that enables the assessment of morphologic and physiologic changes in a single examination. It also allows for a quantitative evaluation of

ADC from images with different b-values (*Namimoto et al., 2009*).

DWI can provide excellent tissue contrast, making it an excellent choice in cases where contrast administration is not possible. Furthermore, the additional scanning time is relatively short (*Levy et al., 2011*).

The most important prognostic factors for cervical cancer are tumor stage and size. The presence and extent of nodal involvement is another important prognostic factor (*Kim et al., 2007*).

DWI is a potentially useful adjunct to conventional MRI in the evaluation of gynecologic tumors, thus improving the overall diagnostic accuracy, tumor staging, prediction of response to therapy, and treatment follow-up (*Jemal et al., 2011*).