ULTRASOUND VERSUS MAGNETIC RESONANCE IMAGING IN ASSESSMENT OF PARAMETRIAL INVASION IN CANCER CERVIX

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INTRODUCTION

The cervical cancer is common gynecological cancer in developing countries.
Women infected with HPV have increased risk to develop cancer cervix.
Squamous-cell carcinoma (SCC) is the most common type according to histopathologic examination of this cancer. Extension of cervical cancer is based on clinical examination and radiology according to International Federation of Gynecology and Obstetrics (FIGO) staging.
Magnetic resonance imaging (MRI) is used to diagnose locoregional spread of cervical cancer.
Ttransvaginal ultrasound (**TVUS**) or transrectal ultrasound (**TRUS**) when performed by ultrasound-trained gynecologists may also provide accurate and detailed information on locoregional tumor spread .Transvaginal / transrectal ultrasound (**TVUS/TRUS**) has the advantage of being readily available at low cost and performed by the treating gynecologist.

AIM OF THE WORK

The aim of this study was to determine the diagnostic accuracy of ultrasound examination when compared to MRI in the evaluation of parametrium invasion in cervical cancer.

PATIENTS AND METHODS

PATIENTS: The study included fifty patients proved to have cervical carcinoma by prior cervical biopsy and histopathologic examination at oncology unit of the Department of Obstetrics and Gynecology of Shatby Maternity university hospital, Alexandria, Egypt. The study protocol was approved by the Ethics Committee of faculty of medicine, Alexandria University.
Exclusion criteria were:
- Cases who had Contraindications to MRI. (Metallic implants- Claustrophobia- Pacemakers- Contrast allergy- Body weight).
- Recurrent cervical cancer.
- Past history of radio-chemotherapy related to cancer cervix.

METHODS: All patients had undergone:
Thorough history taking.
Biopsy and histopathology.
Examination under general anesthesia.
MRI imaging.
Ultrasound examination.
The examiner recorded his evaluation of the case in report then comparison was established between the ultrasound findings and the MRI findings.
The ultrasound examiner was blinded from the results of the MRI.
Surgery and radiotherapy treatment.

RESULTS

Table 1: Agreement (sensitivity, specificity and accuracy) between ultrasound and MRI for Invasion Lat Parametrium

Invasion Lat (Parametrium)	MRI				Sensitivity	Specificity	PPV	NPV
	No (n =16)		Yes (n =28)					
	No.	%	No.	%				
TVS								
No	15	93.8	2	7.1	92.86	93.75	96.30	88.24
Yes	1	6.3	26	92.9				
c^2(p)	32.213*(<0.001*)							
κ	0.855 (Very Good)							

Table 2: Agreement (sensitivity, specificity and accuracy) between ultrasound and MRI for Invasion Ant paranetrium

Invasion (Ant paranetrium)	MRI				Sensitivity	Specificity	PPV	NPV
	No (n =24)		Yes (n =12)					
	No.	%	No.	%				
TVS								
No	22	91.7	4	33.3	66.67	91.67	80.0	84.62
Yes	2	8.3	8	66.7				
c^2(^{FE}p)	13.569*(0.001*)							
κ	0.608 (Good)							

Table 3: Agreement (sensitivity, specificity and accuracy) between ultrasound and MRI for Invasion Post parametrium

Invasion (Post parametrium)	MRI				Sensitivity	Specificity	PPV	NPV
	No (n =29)		Yes (n =7)					
	No.	%	No.	%				
TVS								
No	29	100.0	4	57.1	42.86	100	100	87.88
Yes	0	0.0	3	42.9				
c^2(^{FE}p)	13.558*(0.005*)							
κ	0.547 (Moderate)							

Figure: illustrates that there is Anterior parametrial invasion.

CONCLUSION

- Pelvic magnetic resonance imaging (MRI) has long been established as a valuable imaging method in the primary diagnostic work-up of macroscopically visible cervical cancers.
- Notwithstanding, in the last few years, ultrasound has gained attention as an imaging technique for evaluating women with cervical cancer. Several studies found that TVS is as sensitive as MRI for identifying parametrial involvement.
- This study concluded that TVUS and MRI in detection of parametriaal invasion are comparable so TVUS examination of cervical cancer patients is very helpful.

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