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Review Article

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A PICTORIAL ASSAY ON MRI STAGING OF CA CERVIX

Dr. Ishani Shukla* and Prof. (Dr.) Parul Dutta

Department of Radiology, Gauhati Medical College and Hospital.

***Corresponding Author: Dr. Ishani Shukla**

Department of Radiology, Gauhati Medical College and Hospital.

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ABSTRACT

Cervical carcinoma is the third most common gynaecologic malignancy usually presenting at an average age of 45 years. The International Federation of Gynecology and Obstetrics (FIGO) staging system is widely used for treatment planning.MR imaging is now widely accepted for evaluation of the main prognostic factors and selection of therapeutic strategy. Here we present a pictorial review of MRI staging of carcinoma cervix.

KEYWORDS: CA cervix, MRI, FIGO staging.

INTRODUCTION

The incidence of cervical cancer is rising rapidly in developing countries. It has a peak age of presentation between between 45 and 55 years.[1,2] The patients may have associated Human Papilloma Virus infection and they usually present with vaginal bleeding and discharge. The International Federation of Gynecology and Obstetrics (FIGO) staging system was updated in 2018. FIGO staging is used for treatment planning.[1,3] Magnetic Resonance Imaging (MRI) is the preferred imaging modality as its is superior to computed tomography (CT) for assessment of soft tissue details, stromal and parametrial invasion. With the help of MRI, we can determine the size, shape, and direction of the primary lesion, local extent of the disease, and nodal status accurately, which helps in treatment planning. FIGO staging system is used to stage cervical cancer on MRI.[4]

Figo stage I

FIGO stage no longer includes the carcinoma in situ or stage 0.[5] Stage I is confined to cervix

IA: invasive carcinoma only diagnosed by microscopy

IB: invasive carcinoma with measured deepest invasion ≥5 mm (greater than stage IA), lesion limited to the cervix uteri

IB1: ≥5 mm depth of stromal invasion and <2 cm in greatest dimension

IB2: ≥2 cm and <4 cm in greatest dimension

IB3: ≥4 cm in greatest dimension

Figure 1 depicts stage IB1 carcinoma cervix where an ill-defined thickening is seen involving the anterior lip of cervix.

figo stage II

In this stage there is extension beyond the uterus, but has not extended onto the lower third of the vagina or to the pelvic wall

IIA: involvement limited to the upper 2/3rd of vagina without parametrial invasion

IIA1: <4 cm in greatest dimension

IIA2: >4 cm in greatest dimension

IIB: with parametrial involvement but not up to the pelvic wall

Figure 2 depicts stage IIb where the lesion extends to involve the lower uterine body, parametrium and upper 1/3rd of vagina. The biopsy report was confirmatory for squamous cell carcinoma.

Surgery is the treatment of choice for stages lower than IIA, except for lesions over 4 cm in diameter (stage IB2 or IIA). Radiation therapy alone or combined with chemotherapy is preferred for stages IIB or higher or for lesions greater than 4 cm.

Figo stage III

Here the carcinoma involves the lower third of the vagina and/or extends to the pelvic wall and/or causes hydronephrosis or non-functioning kidney and/or involves pelvic and/or paraaortic lymph nodes

IIIA: carcinoma involves the lower third of the vagina, with no extension to the pelvic wall

IIIB: extension to the pelvic wall and/or hydronephrosis or non-functioning kidney (unless known to be due to another cause)

IIIC: involvement of pelvic and/or paraaortic lymph nodes, irrespective of tumor size and extent

Figure 3 depicts stage IIIA with cervical lesion extending to involve the lower two third of vagina also.

Figo stage IV
Extension of tumour beyond the true pelvis or has involved (biopsy proven) the mucosa of the bladder or rectum
IVA: spread to adjacent organs
IVB: spread to distant organs

Figure 4 depicts lesion involving the cervix and lower uterine body with parametrial and UB invasion. Hyperintense thickening of the bladder mucosa at T2-weighted imaging indicates edema and is not a direct sign of invasion. The "bullous edema sign" of the posterior wall mucosa needs careful analysis for assessment of any associated tumour nodules.[6]

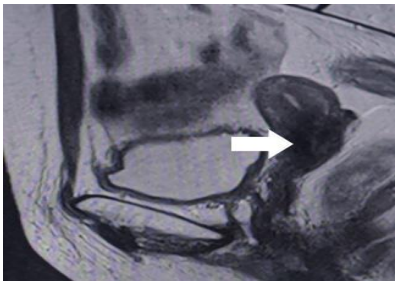

Figure 1: Sagittal T2 weighted MRI shows an ill-defined thickening (arrow) involving the anterior lip of cervix- FIGO stage I.

Figure 2: (a), (b) and (c): T1WI, T2WI and post contrast images respectively showing T1 hypointense lesion and iso to hyperintense on T2WI in anterior and posterior lip of cervix circumferentially with expansion of cervix. on post contrast study(c) there is heterogeneous enhancement of the lesion, which is extending to lower uterine body, parametrium and upper 1/3rd of vagina- FIGO stage IIb.

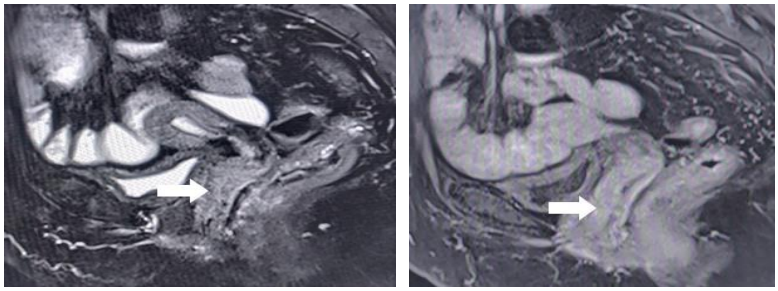

Figure 3: (a) and (b) T2WI and post contrast images showing an iso to hyperintense irregular thickening involving both lips of cervix. on post contrast study extension to lower two thirds of vagina is confirmed (arrows)- FIGO stage IIIA.

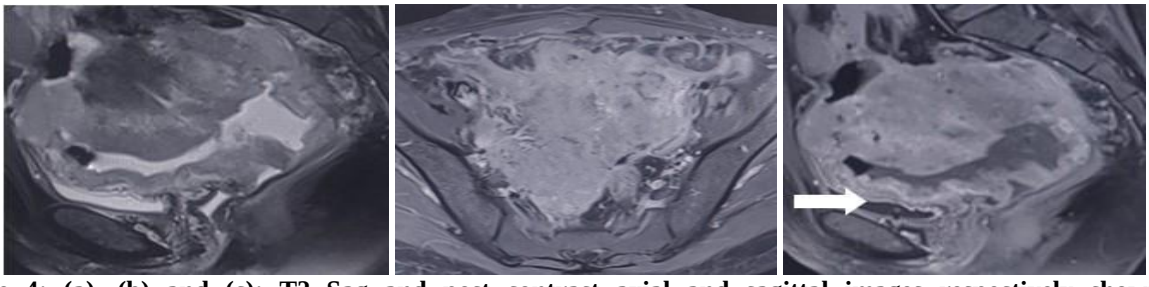

Figure 4: (a), (b) and (c): T2 Sag and post contrast axial and sagittal images respectively showing a heterogeneously enhancing ill-defined lesion predominantly in cervix and lower uterine body with parametrial and urinary bladder invasion (arrow)- FIGO stage Iva.

CONCLUSION

MRI plays important roles in cervical cancer starting from detection of disease to evaluation of recurrent disease. It obviates the use of invasive procedures such as cystoscopy and proctoscopy.[7-11] Functional MRI sequences like DWI and DCE help in establishing a correct diagnosis but sometimes necessary to perform biopsy and histopathological analysis. Although mostly encountered histological type is squamous cell cancer, adenocarcinoma, adenoid-cystic, adenoid-basal, and small cell carcinoma are also seen.[12] MRI helps in optimization of brachytherapy and external beam therapy by evaluation of the shape and direction of lesion.[11, 13]

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