ENDOMETRIAL HYPERPLASIA MIMICKING AS AGGRESSIVE ENDOMETRIAL CARCINOMA ON IMAGING: ROLE OF DIFFUSION WEIGHTED MRI

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ABSTRACT

This case report describes a 46 year old premenopausal female presenting with heavy vaginal bleeding .Ultrasound showed irregularly thickened endometrium and MRI showed thickened endometrium with indistinct margins and extension into the myometrium without significant contrast enhancement.DWI did not show a bright endometrium and no signal dropout on ADC, suggestive of benign aetiology. Histopathology revealed endometrial hyperplasia as final diagnosis. The unusual imaging appearance of this lesion and role of DWI in its differential diagnosis are discussed.

Introduction

Endometrial carcinoma is the most common malignancy of female pelvis in the industrialized western countries with an increasing incidence in other parts of the world.[1] Many factors like reproductive characteristics, obesity, smoking and use of steroid hormones increases the risk of endometrial cancer.[2] Post menopausal women are predominantly affected and the most common presentation is vaginal bleeding .Many benign endometrial pathologies may also cause bleeding and hence correct diagnosis is essential in treatment planning .Endometrial curettage or biopsy is an option for diagnosis but this is invasive, mostly performed in a blind manner and definitive diagnosis is not always possible. Imaging plays an essential role in diagnosis, treatment planning and evaluation of prognosis in such cases.

Conventional imaging that includes ultrasound, CT and MRI detects abnormality by altered tissue appearance and anatomical distortion with increased detection and delineation by intravenous contrast administration. Functional imaging techniques using CT,MRI and PET which make use of the patho-physiology of the tumour are now increasingly applied for tumour evaluation, treatment response monitoring and to detect residual or recurrence of tumour.[3] Diffusion weighted imaging is an emerging functional technique that is now playing significant role in differentiating malignant from benign lesions.[4]

We report a case of endometrial hyperplasia which on conventional imaging mimicked endometrial carcinoma and functional imaging by DWI MRI suggestive of benign lesion resulting in appropriate preoperative diagnosis and treatment planning.

Case Report

We present a case of a 45 year old pre menopausal female. Her primary complain was of heavy periods and lethargy since 3-4 years. She went to multiple doctors and underwent multiple laboratory and radiology investigations. Despite multiple treatments, she did not improve. On examination, the patient was anaemic. On pervaginal examination the uterus was enlarged. Her transabdominal and transvaginal ultrasounds revealed enlarged uterus with thickened endometrium ranging from 1.8 to 2.1cm irrespective of phases of menstrual cycle. The endometrium was irregular in

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outline and appeared to infiltrate the myometrium. Findings were suggestive of neoplastic lesion. Eventually, she had an MRI done which showed thickened endometrium with indistinct irregular margins and focal extension into the myometrium. The endometrium appeared low on T1 and high on T2 and no significant contrast enhancement noted on post contrast images (Fig. 1&2).

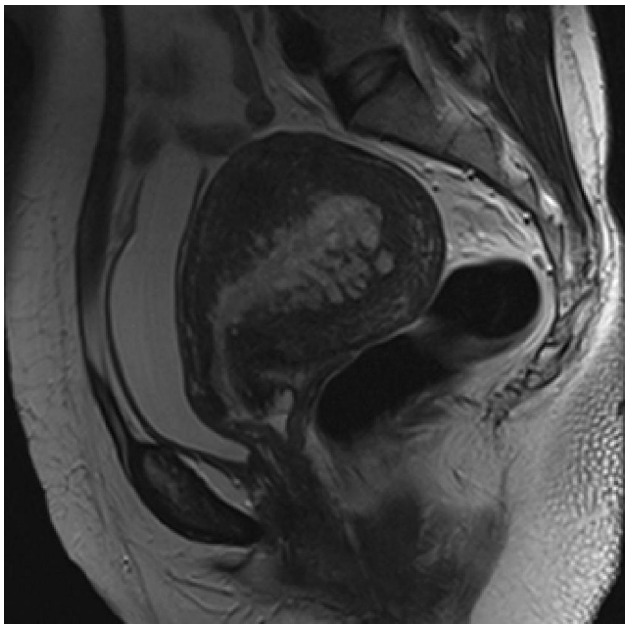

Figure 1. Thickened irregular hyperintense endometrium on T2WI

Figure 2. Insignificant endometrial enhancement on post contrast T1WI

Diffusion weighted images did not show a bright endometrium and on corresponding ADC mapping images no signal dropout was seen (Fig. 3&4).

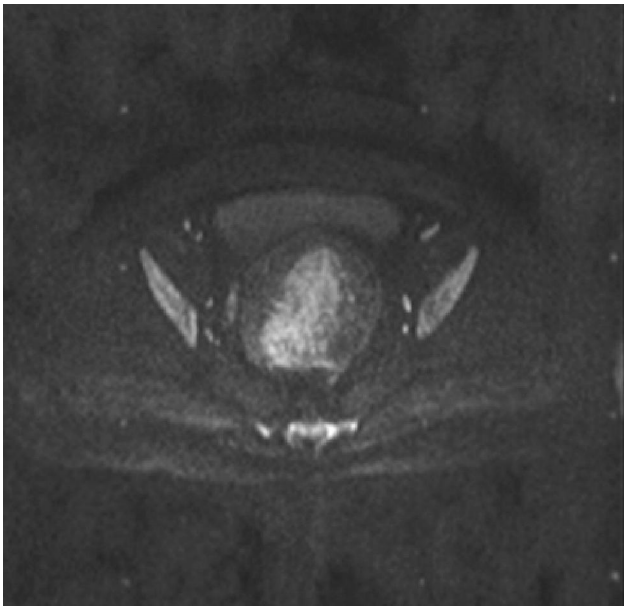

Figure 3. Negative on DWI

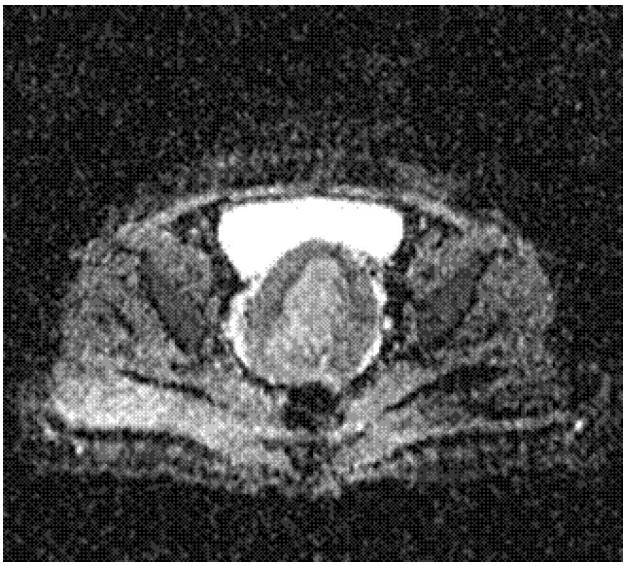

Figure 4. No signal dropout on ADC

The appearances on DWI and ADC favoured a benign aetiology which was also confirmed on histopathology with final diagnosis of endometrial hyperplasia.

Discussion

Abnormality of endometrial cavity may be caused by various conditions such as endometrial carcinoma and benign entities like hyperplasia, sub mucosal myoma, polyp, etc. In these situations imaging is frequently required. The primary modality for endometrial assessment is transvaginal sonography however it is non specific and presents as diffuse endometrial thickening and differentiation of individual endometrial lesions is not always possible.[5] In the patient described in this case report the TVS examination showed an enlarged uterus with irregularly thickened endometrium. The differentials being endometrial carcinoma, hyperplasia or adenomyosis. Hysterosonography may differentiate between focal lesions and diffuse lesions but exclusion of malignancy is not always possible.[6] Magnetic resonance imaging is superior in delineating different endometrial lesions and staging of endometrial malignancy.[7]

Endometrial hyperplasia is an abnormal proliferation of endometrial glands and stroma in response to oestrogen stimulation and is sub classified as hyperplasia without atypia(less than 27% progress to carcinoma) and atypical hyperplasia (23% progress to carcinoma).[8] Imoka et al[9] MRI recommendations for diagnosis of endometrial abnormality on T2WI provides initial differential diagnosis based on signal intensity, morphology and contrast enhancement. They concluded that an indistinct iso to low or high signal intensity lesion on T2WI suggest an endometrial lesion. Further characterization by T1WI post contrast sequence showing weak enhancement pattern suggest endometrial carcinoma and moderate to strong enhancement suggestive of benign aetiology. The MRI pelvis of the case under discussion showed irregularly thickened hyperintense endometrium on T2WI with weak contrast enhancement, the findings favouring malignancy.

Diffusion weighted imaging by using ADC value plays an important role in distinguishing benign from malignant lesion based on information regarding tissue cellularity and cell membrane integrity.[10] DWI also aids in assessing lesion aggressiveness and monitoring treatment response. Fusion of high b-value DWI and T2WI (for anatomic detail) has proved a high accuracy of 0.88 for myometrial invasion of endometrial carcinoma.[11] Endometrial cancers are depicted as hyperintense areas on high b-value DWI whereas normal and benign tissue signals are suppressed. DWI was problem solving in this case as the endometrial lesion was low signal on b-1000 and high signal on ADC suggestive of benign aetiology of endometrial hyperplasia.

In conclusion DWI and ADC is a powerful diagnostic tool that provides additional information in complex situations. The examination is quick and can be easily added into existing MR examination protocol without requirement of intravenous contrast.

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