

Value of magnetic resonance imaging in identifying mucosal urinary bladder metastasis from endometrial carcinomas: a case report

António Pedro Sanches de Andrade Pissarra^{1,*}, Teresa Margarida Rodrigues Roque Proença e Cunha², Rodrigo Nuno Brito Ramos³, Isabel de Brito Santana⁴

¹Radiology Department, Unidade Local de Saúde da Guarda, 6300-035 Guarda, Portugal

²Radiology Department, Instituto Português de Oncologia de Lisboa Francisco Gentil, 1099-023 Lisbon, Portugal

³Urology Department, Instituto Português de Oncologia de Lisboa Francisco Gentil, 1099-023 Lisbon, Portugal

⁴Gynaecology Department, Instituto Português de Oncologia de Lisboa Francisco Gentil, 1099-023 Lisbon, Portugal

*Correspondence: antoniopedropissarra@gmail.com (António Pedro Sanches de Andrade Pissarra)

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A 73-year-old female patient with no relevant past medical history presented with post-menopausal vaginal bleeding. The patient underwent a hysteroscopy with endometrial biopsy revealing a poorly differentiated endometrial serous carcinoma. MRI staging depicted para-aortic lymph nodes and peritoneal metastases in the left upper quadrant. There were no signs of invasion of the outer half of the myometrium. Two polypoid lesions were identified in the posterior wall of the bladder and a confirmatory cystoscopy was recommended. Those lesions were later confirmed to be metastases of endometrial origin. Non-contiguous metastases to mucosal urinary bladder from endometrial carcinoma can occur and, as depicted in our case, can be well identified with magnetic resonance imaging.

Keywords

Gynecology; Gynecology Imaging; Radiology; Medical Education

1. Introduction

A case of a 73-year-old patient with rare metastatic disease to the mucosal urinary bladder from an undifferentiated endometrial carcinoma, identified by magnetic resonance imaging, is presented.

Type 2 endometrial cancers (grade 3 endometrioid carcinomas and non-endometrioid carcinomas) are often clinically aggressive with early distant disease (even in the absence of myometrial invasion). Imaging modalities, namely magnetic resonance, allow for adequate staging of these patients.

2. Case report

A 73-year-old patient, with no relevant past medical history, presented to her physician with post-menopausal vaginal bleeding in June 2018. The patient underwent a transvaginal ultrasound examination which revealed an abnormal endometrial thickening (13 mm). She was then sent to a specialized centre for suspected endometrial malignancy. In October 2018, the patient underwent a hysteroscopy with

endometrial biopsy consistent with poorly differentiated endometrial serous carcinoma.

MRI staging of the endometrial carcinoma was then performed, revealing para-aortic lymph nodes and peritoneal metastases in the left upper quadrant. In the uterus, a large endometrial tumour was depicted (dotted line in Fig. 1), without unmistakable signs of invasion of the outer half of the myometrium. Besides typical leiomyomas, (* in Fig. 1) a nodule in the anterior part of the outer myometrium was identified (white arrow in Fig. 1), presenting the same imaging characteristics of the endometrial tumour (namely in the diffusion-weighted study) and, therefore, highly suggestive of metastasis. Two polypoid lesions were also identified inside the bladder, adjacent to the posterior wall (white arrows in Fig. 2). Although not in continuity with the primary tumour, these lesions were also considered suspicious for metastatic disease and a confirmatory cystoscopy was recommended.

In December 2018, the patient underwent a cystoscopy with complete transurethral resection of the bladder tumours, with pathology confirming the presence of a poorly differentiated carcinoma, morphologically similar to the endometrial serous carcinoma previously diagnosed (Fig. 3).

Given the advanced stage of the disease (stage IVB endometrial cancer, Revised 2009 FIGO staging), the patient initially underwent six cycles of chemotherapy treatment (paclitaxel and carboplatin), which were well tolerated. Seven months later the patient performed a follow-up abdominal and a pelvic MRI, which showed optimal therapeutic response, allowing surgical treatment with hysterectomy and bilateral adnexectomy. The surgical specimen confirmed the presence of an endometrial serous carcinoma with invasion of the inner half of the myometrium, without invasion of the serosa (Fig. 4) or reference to lymph node metastasis.

The patient is still alive 16 months after surgery and main-

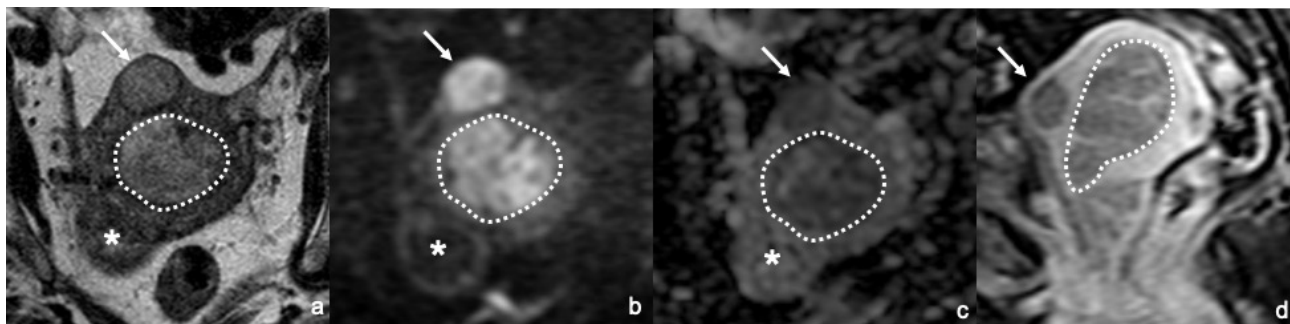


Fig. 1. Axial T2-weighted (a) DWI image ($b = 1000$) with ADC map (b and c) and sagittal contrast-enhanced 3D gradient echo image with fat suppression after contrast injection (d) MR images. The endometrial tumour (white dotted line) is hyperintense when compared to normal endometrium. Two myometrial nodules can also be found, one in the anterior part of the uterine body (white arrow, with similar imaging behaviour of the endometrial carcinoma) and one in the posterior part of the body (white *, suggestive of corresponding to a subserosal leiomyoma).

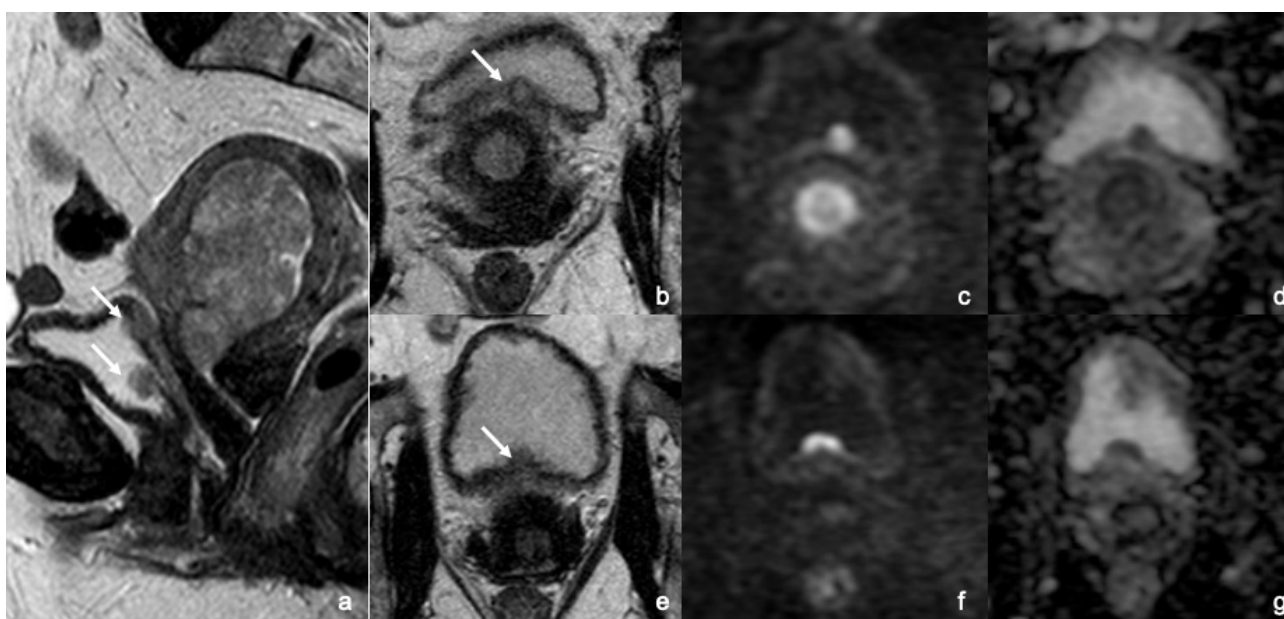


Fig. 2. Sagittal (a) and axial T2 (b and e) and DWI images ($b = 1000$) with ADC map (c, d, f, g). Two nodules (white arrows) with restricted diffusion are identified in the posterior bladder wall, suspicious for malignancy.

tains regular follow-up without unmistakable signs of active disease in the most recent FDG-PET/CT.

3. Discussion

Endometrial carcinoma is the fourth [1] most common malignancy in women worldwide and represents the most common gynaecological cancer in developed countries. The three common spread patterns of endometrial cancer are local invasion, lymphatic spread and haematogenous spread [2]. The most common sites of metastatic disease are pelvic and para-aortic lymph nodes, usually present in the context of deep myometrial invasion (present in 46% of those cases, compared to 3% when only superficial myometrial invasion occurs) [3]. Less common sites of metastatic disease such as bones, brain, abdominal wall and intra-abdominal organs rarely occur [4]. Bladder involvement usually occurs due to

direct extension of the endometrial tumour, unlike the case we presented.

Aggressive pathologic variants of endometrial carcinoma (grade 3 endometrioid and non-endometrioid carcinomas), poor histologic differentiation and over 60 years of age, have been previously described as significant predictors of distant disease. Particularly, deep myometrial invasion ($>50\%$) has been proved to be a strong predictor of haematogenous dissemination in endometrial cancer [1], which was the presumable route of the bladder metastasis in the case we presentend.

Invasion of the outer half of the myometrium was not present in the hysterectomy specimen in our case. However, the patient underwent neoadjuvant chemotherapy with optimal therapeutic response, which may have resulted in more superficial invasion of the myometrium compared to what was initially present.

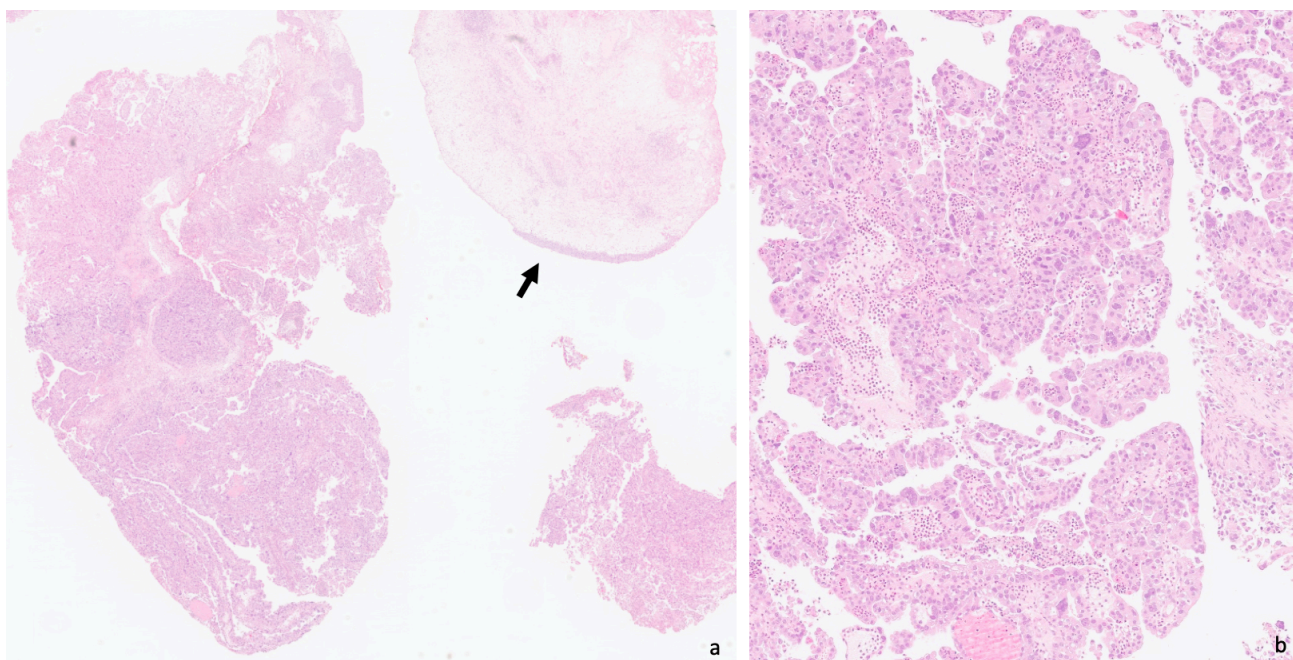


Fig. 3. Bladder biopsy stained with H&E. Low power (a) view with poorly differentiated papillary adenocarcinoma and fragment of normal urothelial mucosae with some oedema (arrow). High power (b) view of the tumour shows pleomorphic and very atypical nucleus, and papillary growth with similar morphology as the endometrial serous carcinoma.

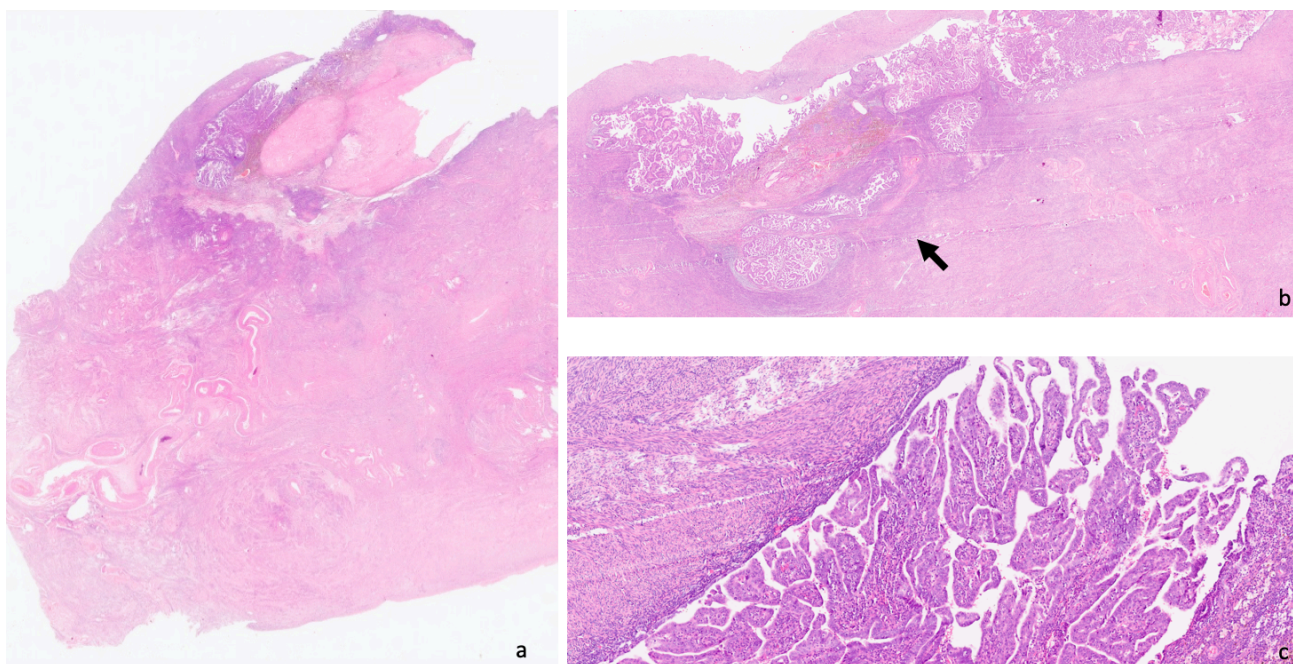


Fig. 4. Histological section of the uterus stained with H&E. Low-power (a) view of the endometrial cavity occupied by the serous carcinoma. Focal (inner half) invasion of the myometrium (arrow in b). High-power (c) view atrophic endometrial and papillary growth of endometrial serous carcinoma. There were no signs of invasion of the serosa of the corpus uteri (minimal distance of 15 mm).

Adequate staging of endometrial carcinomas with MRI, particularly in high-risk tumours, is crucial for adequate management of these patients.

Abbreviations

MRI, Magnetic Resonance Imaging; ADC, Apparent diffusion coefficient.

Author contributions

APP and TMC wrote the article and interpreted the MR scan. IS and RR were the doctors assigned to this patient and provided important clinical data. All authors have read and approved the manuscript.

Ethics approval and consent to participate

The paper was not submitted to approval by an Ethics Committee. A written consent from the patient was obtained.

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Conflict of interest

The authors declare no conflict of interest.

References

- [1] Mariani A, Webb MJ, Keeney GL, Calori G, Podratz KC. Hematogenous dissemination in corpus cancer. *Gynecologic Oncology*. 2001; 80: 233–238.
- [2] Wang Y, DU J, Lv S, Sui Y, Xue X, Sun C, *et al*. Vaginal implantation metastasis of endometrial carcinoma: a case report. *Oncology Letters*. 2019; 12: 513–515.
- [3] Sala E, Wakely S, Senior E, Lomas D. MRI of malignant neoplasms of the uterine corpus and cervix. *American Journal of Roentgenology*. 2007; 188: 1577–1587.
- [4] Kurra V, Krajewski KM, Jagannathan J, Giardino A, Berlin S, Ramaiya N. Typical and atypical metastatic sites of recurrent endometrial carcinoma. *Cancer Imaging*. 2013; 13: 113–122.