Abdom Imaging 22:441–444 (1997)

Abdominal Imaging

MR imaging of primary uterine lymphoma

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Received: 14 March 1996/Accepted: 22 March 1996

Abstract

Primary malignant lymphoma of the uterus is a rare disease. We present the MR findings in three cases where the uterus was the initial site. MR findings were retrospectively evaluated. Although the intact junctional zone is a specific finding for lymphoma, diffuse enlargement of the uterus and relatively homogeneous signal intensity on MR imaging in spite of large tumor size are helpful for diagnosing uterine lymphoma.

Key words: Uterus, neoplasms—Lymphoma—Magnetic resonance imaging.

Although infiltration of the uterus may occur in the later stages of a lymphomatous disease, the uterus itself is rarely the initial site of malignant lymphoma [1, 2]. Lymphoma of the uterus is a treatable malignant neoplasm. However, the reports of radiological findings of this disease are limited [1–3]. It is often underdiagnosed, both because it is unexpected in this location and misdiagnosed as an inflammatory lesion or another type of malignant tumor [3].

We have encountered three cases of primary uterine lymphoma, two cases with the cervix and one case with both the corpus and cervix.

Case report

Case 1

A 60-year-old woman was presented with lower abdominal mass, fever, and chilling. Pelvic examination revealed marked enlargement of the uterus, and endometrial carcinoma was suspected. Cervical Papanicolau (Pap) smear was negative. CT scans revealed a diffuse enlarged uterus with extension to both round ligaments. Magnetic resonance imaging (MRI) was performed with a 1.5T unit. Sagittal T2-weighted imaging (WI) showed extensive, uniform enlargement of the uterus and intact fundus portion of the normally hypointense junctional zone (Fig. 1). Diffuse involvement of the vagina and the posterior bladder wall was also suspected. The lesion exhibited a homogeneous isointense signal on T1WI and relatively hyperintense signal on T2WI. The MR imaging findings were different from those reported for common gynecologic diseases, such as leiomyoma, adenomyosis, cervical carcinoma, and endometrial carcinoma.

The pathologic diagnosis after cervical punch biopsy was non-Hodgkin's lymphoma, diffuse large-cell type. The patient was treated with chemotherapy, and marked remission resulted. On follow-up MR examination (Fig. 1C), the uterus had markedly decreased in size. Normal appearances of the cervical stroma, vagina, and the posterior bladder wall were also restored.

Case 2

A 24-year-old woman was transferred to our hospital for further evaluation of a cervical tumor. Her chief complaint was vaginal bleeding lasting for 2 months. Carcinoma of the cervix was initially suspected, however, cervical Pap smear was negative. The pathologic finding after cervix punch biopsy was non-Hodgkin's lymphoma, diffuse large-cell type. MR imaging showed eccentric enlargement of the uterine cervix and thickening of the anterior and posterior vaginal walls (Fig. 2). The lesion exhibited homogeneous isointense signal on T1WI and homogeneous hyperintense on T2WI. The MR findings closely resembled those of carcinoma of the cervix.

Case 3

A 53-year-old woman presented with abnormal vaginal bleeding. Physical examination revealed uterine enlargement suggestive of extensive involved cervical carcinoma. However, cervical Pap smear was negative, and histologic examination of the biopsied specimen failed to show evidence of malignancy. Laparotomy was performed, and tumor, predominantly involving the cervix, was confirmed. The pathologic diagnosis of the resected specimen was non-Hodgkin's lymphoma, diffuse large cell type. MRI revealed markedly diffuse enlargement of the uterine cervix and diffuse thickening of the anterior and posterior vaginal walls (Fig. 3). The lesion exhibited homogeneous isointense signal on T1WI and hyperintense signal on T2WI.

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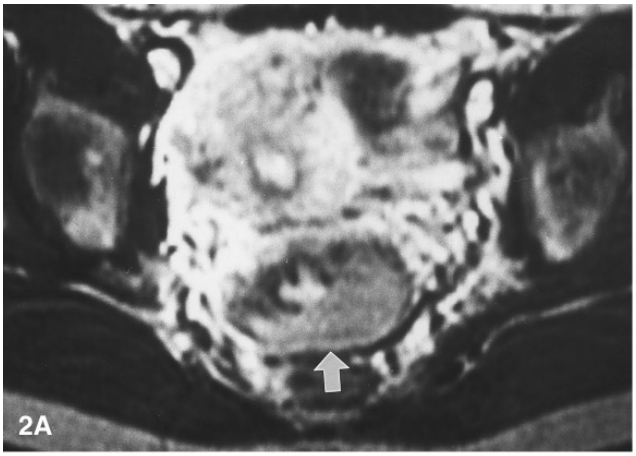
Fig. 1. A 60-year-old woman. **A** Axial T1-weighted (600/11) MR images. The lesion extends from the fundus to the bilateral round ligaments (*arrows*). The lesion has homogeneous isointense signal intensity. **B** Sagittal T2-weighted (2,000/70) MR images. The cervix and corpus are enlarged with hyperintense lesion. In spite of the extensive involvement of the myometrium, junctional zone of fundus is seemingly preserved (*arrow*). **C** Sagittal T2-weighted (2,000/70) MR image after chemotherapy. The uterus is decreased in size. The cervical stroma and vagina are restored to the normal hypointensity. However, some portions of corpus still present with hyperintense signal lesion (*arrow*).

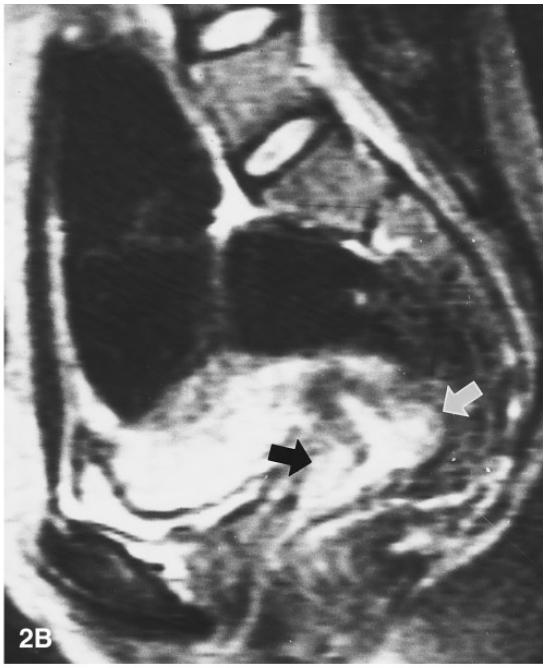
Discussion

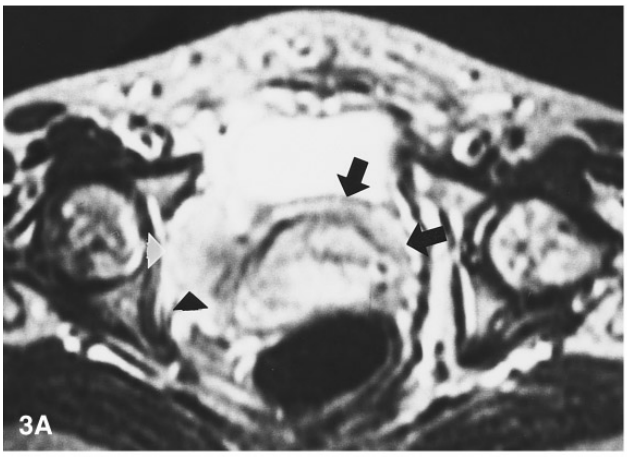
Malignant lymphoma frequently infiltrates the uterus in cases of advanced disease; however, it is rare to find uterine involvement as the initial manifestation [1, 4]. Its frequency in Western countries was reported to be 0.008% among primary cervical tumors and 2% among extranodal lymphomas in women [5]. Based on cases in the Armed Forces Institute of Pathology files, approximately one in 175 female extranodal lymphomas is likely to originate from the vagina, uterus, or cervix [6]. The common presenting symptoms are vaginal bleeding, perineal discomfort, and vaginal discharge [2]. Our three cases had a history of abnormal vaginal bleeding and abdominal discomfort.

Since the lesion can have a relatively good prognosis if it is treated appropriately, exact diagnosis and evaluation of the disease extent are mandatory [2]. As more effective chemotherapeutic regimens have become available, several cases of cervical lymphoma treated with chemotherapy alone or in combination with radiation or surgery have been reported [2]. One case of ours was complete remission and sustained well being. The remaining two cases did not present complete remission.

Pathologically, the differential diagnosis of malignant lymphoma of the uterus and vagina includes in-







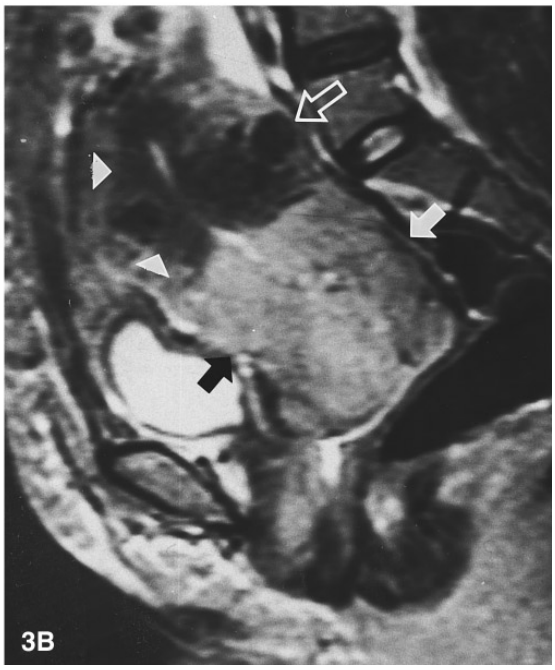


Fig. 2. A 24-year-old woman. **A** Axial T2-weighted (2000/70) MR images reveal homogeneous high signal mass in the posterior and left side of cervix (*arrow*). **B** Sagittal T2-weighted (2000/70) MR image, the lesion extends from the cervix to the anterior and posterior vaginal fornices (*arrows*). The low signal intensity in the cervical stroma is lost.

Fig. 3. A 53-year-old woman. **A** Axial T2-Weighted (2,000/80) MR Images. The lesion that has high signal intensity extends from the cervix to the vagina (*arrows*) and the right pelvic side wall (*arrowheads*). **B** Sagittal T2-weighted (2,000/70) MR images. The lesion presents diffuse enlarged high signal cervix mass (*arrows*). On sagittal T2WI adenomyosis typically exhibits low signal intensity similar to that of the junctional zone (*arrowheads*) and is subjacent to the endometrium. Additionally, myoma in the body of uterus (*open arrow*) are present.

flammatory lesions, small-cell carcinoma, and sarcoma [4]. According to the pathological studies, the most common presentation of lymphoma of the uterus is diffuse symmetrical enlargement of the cervix and corpus, without mucosal abnormalities [2]. Lymphomas usually do not have stroma and do not cause a fibrous reaction. Lymphoma cells may infiltrate the entire layer of the uterus without destroying the normal uterine architecture [1]. The origin of the tumor in the cervical stroma initially preserves the overlying squamous epithelium, so cervical cytologic preparation is often normal unless the cervix is ulcerated. Cervical Pap smear was performed in all of our cases. However, cytology results were all negative.

The histology of lymphoma is most commonly encountered at the diffuse large-cell malignant lymphomas (Working Formulation) [4]. Histologically, all of our cases had diffuse large-cell non-Hodgkin's lymphoma.

According to some previously reported MR imaging of uterine lymphoma, diffuse enlargement of

the uterus without disruption of the endometrial or cervical epithelium are the findings of lymphoma, which is specific for diagnosing this disease [1, 7]. However, in some cases, lymphoma exhibits MR findings that closely resemble cervical carcinoma or endometrial carcinoma when lymphoma involved the endometrium and cervical stroma [2]. In one case involving the corpus, the junctional zone of the fundus portion was intact. However, two cases of cervical lymphomas were completely replaced by lymphoma.

Although the intact junctional zone is a specific finding for lymphoma, diffuse enlargement of the uterus and a relatively homogenous signal intensity on MR imaging in spite of large tumor size are helpful for diagnosing uterine lymphoma.

References

1. Yamada I, Suzuki S. Primary uterine lymphoma: MR imaging [letter]. *AJR* 1993;160:662–663
2. Kawakami S, Togashi K, Kojima N, Morikawa K, Mori T, Konishi J. MR appearance of malignant lymphoma of the uterus. *J Comput Tomogr* 1995;19:238–242
3. Lien HH, Nome O, Berner A. Lymphoma of the uterus: findings on MR imaging [letter]. *AJR* 1994;163:996
4. Harris NL, Scully RE. Malignant lymphoma and granulocytic sarcoma of the uterus and vagina. *Cancer* 1984;53:2530–2545
5. Aozasa K, Saeki K, Ohsawa M, Horiuchi K, Mishima K, Tsujimoto M. Malignant lymphoma of the uterus: report of seven cases with immunohistochemical study. *Cancer* 1993;72:1959–1964
6. Muntz HG, Ferry JA, Flynn D, Fuller Jr AF, Tarraza HM. Stage IE primary malignant lymphomas of the uterine cervix. *Cancer* 1991;68:2023–2032
7. Kimura I, Togashi K, Tsutsui K, et al. MR imaging of gynecologic lymphoma. *J Comput Tomogr* 1991;15:500–501