CLINICAL IMAGE

MR Findings of a Giant Bartholin's Duct Cyst

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We describe the case of a 63-year-old woman with a large Bartholin's duct cyst that showed high signal intensity on T₁- and T₂-weighted magnetic resonance (MR) images. Although Bartholin's duct cyst is the most frequent cystic lesion of the vulva, such a giant cyst is rare.

Keywords: *Bartholin's duct cyst, magnetic resonance images, MRI, vulva*

Introduction

Radiologists have little experience with vulvar lesions because these masses are not usually examined by magnetic resonance (MR) imaging and computed tomography (CT); they are generally diagnosed at autopsy. However, when a large lesion is suspected of malignancy, MR imaging and CT are utilized in diagnosis. We describe the case of a 63-year-old woman with a large Bartholin's duct cyst that was evaluated by MR imaging and CT.

Case

We examined a 63-year-old woman with postmenopausal bleeding, for which medical history was not significant; she had not undergone hormone replacement therapy. Physical examination revealed a 108 × 95-mm mass visible on the left vulvar wall, with shiny surface and some dark red areas. No ulceration was present, and the tumor was elastic, soft, and painless. Pelvic CT showed a well-defined, thin-walled, and homogeneously low attenuated mass located posterolaterally at the inferior part of the vagina (Fig. 1A, B); the mass was neither calcified nor enhanced. On MR imaging using a 1.5T superconducting system (Magnetom Symphony; Siemens, Erlangen, Germany) with a pelvic phased-array multicoil, both sagittal T₁- (Fig. 2A) and T₂-weighted (Fig. 2B) images showed the tumor to have higher signal intensity than muscles. No lymphadenopathy was observed. Because

of location, signal intensity, and absence of a solid component, the preoperative differential diagnosis was Bartholin's duct cyst, abscess, mesonephric cyst, or ciliated cyst. However, malignant tumor could not be excluded because paravulvar cysts in patients over 40 years old can be cancerous.^{1,2}

Upon surgical excision, the tumor was found to have a cystic component of straw-colored fluid with protein content. Microscopic examination showed that the inside of the cyst wall was covered by a squamous epithelium and was partially destroyed (Fig. 3A, B). Based on these findings, the tumor was diagnosed as a Bartholin's duct cyst.

Discussion

Paravulvar cysts are incidentally encountered by pelvic MR imaging and CT.¹⁻⁴ Vulvar cysts include Bartholin's duct cyst, which is most frequent,^{2,3} keratinous cyst, epithelial cyst, Gartner duct cyst, and cyst of the canal of Nuck.^{2,5-8} Bartholin's duct cysts are typically 1 to 4 cm long^{5,6} and are detectable by ultrasound; small and asymptomatic cysts require no treatment.^{9,10} Histology reveals origin;^{9,10} typically, cysts from the main duct are lined with transitional or squamous epithelium and those from the acinus, with columnar epithelium.^{9,10} Therefore, either squamous or adenocarcinoma can develop in a Bartholin duct.¹¹

On MR imaging, T₂-weighted images of Bartholin's duct cysts usually show high signal intensity, though T₁-weighted images show various signal intensities.^{2,3} Mouloupoulos and colleagues reported 3 of 8 patients with paravaginal cysts of low signal intensity and five of high intensity on T₁-

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Fig. 1. (A) Plain computed tomographic (CT) image and (B) enhanced CT image show a well-defined mass and thin wall with homogeneous low density in the left side of the vulva. Enhanced solid component is not seen.

Fig. 2. (A) T₁-weighted sagittal image showing a well-defined mass and a thin wall with homogeneous high intensity in the vulva. (B) T₂-weighted sagittal image showing a 5 × 10-cm well-defined mass with homogeneous high intensity in the vulva.

weighted images and containing blood.³ However, our patient's cyst contained no blood. Our patient showed no microscopically inflammatory process, although the T₁-weighted image showed homogeneous, high signal intensity relative to muscle because of the shorter T₁ relaxation time of the fluid protein compared to that of simple fluid, such as that of a simple cyst.

The differential diagnosis for large cystic masses of the paravulvar region includes Bartholin's duct cyst, cyst of the canal of Nuck, Gartner duct cyst,

and abscess. Usually, Gartner duct cyst occurs in the anterolateral aspect of the proximal third of the vagina, and cyst of the canal of the Nuck, in the inguinal region.¹²⁻¹⁴ Abscess sometimes appears as a large cystic lesion with a thick wall. Because the inflammatory process and blood in these cystic lesions often show high intensity on T₁-weighted images, it is difficult to distinguish characteristic signals. However, location can aid diagnosis of Bartholin's duct cyst. Although the large size (108 × 95 mm) of our patient's tumor made evaluation of the

Fig. 3. (A) Microscopic finding shows the inside of cyst wall is covered by the epithelium. Hematoxylin-eosin (H-E) stain, $\times 200$. (B) Microscopic finding shows the epithelium is mostly covered by the striated squamous epithelium, partly consisting of cylindrical epithelium. H-E stain, $\times 400$.

anatomical site difficult, the cyst was located posterolaterally, at the inferior third of the vagina.

Rarely, malignant lesions in Bartholin's duct cysts present as adenocarcinomas; squamous, adenosquamous, and transitional cell carcinomas; and adenoid cystic carcinomas.⁸⁻¹¹ The high signal intensity on T₁-weighted images may obscure underlying solid components, even after contrast. Thus, images should be examined carefully because the absence of a solid component can exclude malignancy.

In conclusion, Bartholin's duct cyst should be included in the differential diagnosis of patients with a large, well-defined cystic tumor of the vulva.

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