

# Classification of adenomyosis by MR image analysis and pathology

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## Introduction

Adenomyosis is a disorder that presents with hypermenorrhea and dysmenorrhea, and it is associated with uterine hypertrophy. Radical therapy involves hysterectomy, but early diagnosis and the suppression of disease progression in the early stage are required for women desiring to get pregnant. We evaluated the diagnosis of adenomyosis in the early stage based on the analysis of MR images and their classification.

## methods

Among 566 women diagnosed with adenomyosis based on MRI from 2013 to 2015, classification was conducted for 176 in whom hysterectomy was performed and a pathological diagnosis was obtained. MRI was performed for those not receiving medication. We retrospectively classified adenomyosis into 4 types based on modified MRI. We evaluated the clinical symptoms as well as pathohistological findings on HE staining and immunostaining with SMA, desmin, and caldesmon.

## Results

Adenomyosis was classified into 4 types based on MRI findings, as follows: Type I, hypertrophy of the myometrium ( $\geq 2$  cm) and  $\geq 5$  lesions of  $\geq 5$  mm with a high signal intensity considered to be glandular structures; Type II, hypertrophy of the myometrium ( $\geq 2$  cm) and  $< 5$  lesions of  $\geq 5$  mm with a high signal intensity considered to be glandular structures; Type III, no or mild hypertrophy of the myometrium and no lesion with a high signal intensity considered to be a glandular structure; Type IV, lesions infiltrating from Douglas pouch, the intestine, or ovarian adhesion site, not being continuous from the endometrial junctional zone.

With this classification, rates of type I, II, III, and IV were 17, 53, 16, and 15%, respectively. Severe hypermenorrhea was observed in all types but dysmenorrhea tended to be milder in type III. On HE staining, the most prominent feature of type I was a glandular structure, followed by smooth muscle, and stromal tissue was sparse. In type II, all structures were observed evenly. The most prominent feature of type III was smooth muscle, and glandular structures were sparse.

## Conclusion

It was suggested that the early diagnosis of adenomyosis can be facilitated by MRI. In type III adenomyosis, in which hypertrophy of the uterus is absent and only the junctional zone is thickened, evaluation of the junctional zone by MRI is particularly effective and contributes to early diagnosis.

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Authors :

References : , , ,

## Authors

Ota Ikuko 1, Ota Yoshiaki 2,

1. OB/GY, Kurashiki heisei hospital, Kurashiki, JAPAN
2. OB/GY, Kurashiki medhical center, Kurashiki, JAPAN

## Authors (raw format)

Ikuko Ota - email : ikucom0195@gmail.com Institution : Kurashiki heisei hospital Department : OB/GY City : Kurashiki Country : JAPAN Speaker : Yes

Yoshiaki Ota - email : yoshimon@cj8.so-net.ne.jp Institution : Kurashiki medhical center Department : OB/GY City : Kurashiki Country : JAPAN Speaker : No

