

Content available at: <https://www.ipinnovative.com/open-access-journals>

Indian Journal of Pathology and Oncology

Journal homepage: [www.ijpo.co.in](http://www.ijpo.co.in)

## Case Report

# Eosinophilic endometrial metaplasia - case report and brief literature review on its immunohistochemical characteristics

Karthikesh Jayakumar<sup>1</sup>, Barani Karikalan<sup>2,\*</sup>, Srikumar Chakravarthi<sup>3</sup>

<sup>1</sup>Dept. of Pathology, KSR Institute of Dental Sciences and Research, Trichengode, Tamil Nadu, India

<sup>2</sup>Dept. of Pathology, Perdana University Royal College of Surgeons in Ireland, Kuala Lumpur, Malaysia

<sup>3</sup>Faculty of Medicine, Faculty of Medicine, Mahsa University, Selangor, Malaysia



## ARTICLE INFO

### Article history:

Received 19-02-2021

Accepted 06-08-2021

Available online 23-11-2021

### Keywords:

Eosinophilic

Metaplasia

Endometrium

Immunohistochemistry

## ABSTRACT

Endometrial epithelial metaplasia is described as transition of the normal endometrial epithelial cells by benign complex proliferation of cells. These metaplastic changes have been frequently reported as associated changes in endometrial hyperplasia and adenocarcinoma more than non-neoplastic samples and are also known to appear atypical occasionally, and hence can be a diagnostic challenge. Eosinophilic cell change is one of the most frequently encountered endometrial metaplasias. Eosinophilic syncytial change is a form of eosinophilic endometrial metaplasia, and is known to mimic endometrial serous carcinoma, again posing a diagnostic challenge. In this article, we have presented a case of endometrial eosinophilic metaplasia in a 47-year-old patient along with a brief discussion on immunohistochemical characteristics of eosinophilic syncytial change that could help pathologists to differentiate them from malignancies in challenging scenarios.

This is an Open Access (OA) journal, and articles are distributed under the terms of the [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License](https://creativecommons.org/licenses/by-nc-sa/4.0/), which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: [reprint@ipinnovative.com](mailto:reprint@ipinnovative.com)

## 1. Introduction

Endometrial epithelial metaplasia is described as transition of the normal endometrial epithelial cells by benign complex proliferation of cells that are not normally seen in the endometrium. They are usually considered as inconspicuous elements. But since these metaplastic cells can sometimes appear atypical and unusual seen to be lining glands that are complex in architecture, this benign metaplastic process might be confused with endometrial adenocarcinoma. Also, these metaplastic changes have been frequently reported as associated changes in endometrial hyperplasia and adenocarcinoma more than non-neoplastic samples.<sup>1</sup> Hence, it is essential to classify and devise algorithms to distinguish these metaplastic changes from endometrial pathologies such as

hyperplasia and malignancy. These metaplastic changes are often categorised as squamous, ciliated or tubal, papillary syncytial, eosinophilic, mucinous, hobnail and clear cell metaplasias.<sup>2</sup>

In this article, we report a case of endometrial eosinophilic metaplasia is presented along with a brief discussion on the defining characteristics of eosinophilic metaplasia and the differential diagnoses are discussed with an emphasis on immunohistochemistry.

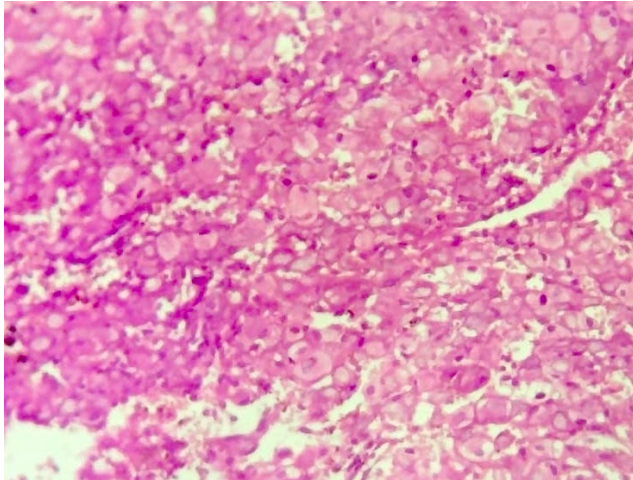
## 2. Case Report

Endometrial biopsy from a 47-year-old patient, with complaints of menorrhagia, to look for any endometrial pathology. The patient had no other complaints. Microscopic examination of the endometrium showed large cells with eosinophilic cytoplasm and mildly pleomorphic nuclei arranged in sheets and attempted glandular patterns

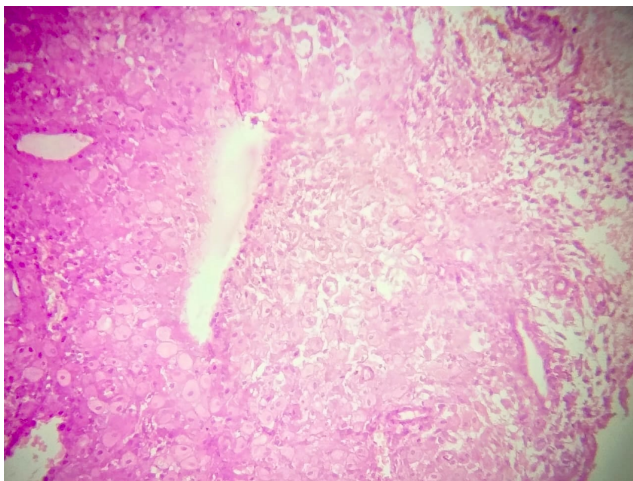
\* Corresponding author.

E-mail address: [baranisri@gmail.com](mailto:baranisri@gmail.com) (B. Karikalan).

(Figures 1, 2 and 3). A pathologic diagnosis of endometrial eosinophilic metaplasia was made. However, in view of the literature reporting too many cases of eosinophilic metaplasia associated with hyperplasia and malignancy, the patient was advised to follow up with immunohistochemical study of the biopsy, to rule out any endometrial pathology.



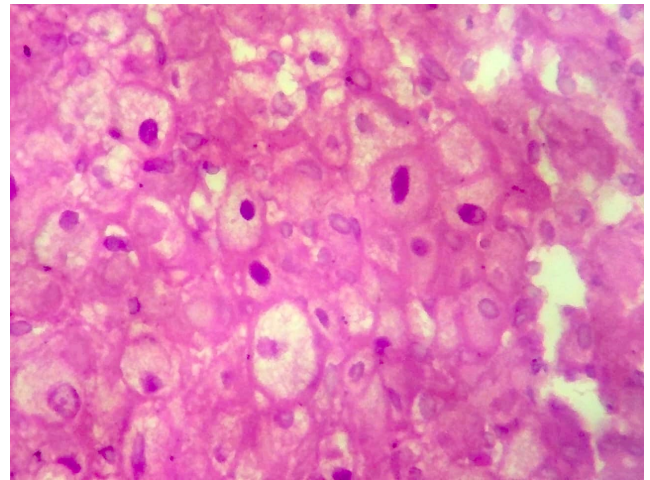
**Fig. 1:** 10X\_H&E\_Eosinophilic cells



**Fig. 2:** 20X\_H&E\_Gland formation

### 3. Discussion

Endometrial metaplasia, in recent times, termed as endometrial epithelial cytoplasmic change, and is described as an adaptive cytoplasmic change frequently seen in the endometrium. Eosinophilic cell change is one of the most frequently encountered endometrial metaplasias found in both neoplastic and nonneoplastic endometrium. Its phenotypic features and mechanisms of development have not yet been fully understood. They comprise 28% of all endometrial metaplasias including mucinous and ciliated



**Fig. 3:** 40X\_H&E\_Eosinophilic cells

metaplasias.<sup>3</sup> Also, eosinophilic metaplasias were seen to be more commonly associated with endometrial pathologies such as hyperplasia and malignancy when compared with their occurrence in normal endometrium.<sup>2</sup> Hence, it is important to rule out any endometrial pathology, especially malignancy, in endometrial samples showing eosinophilic metaplasia.

Eosinophilic syncytial change is a form of eosinophilic endometrial metaplasia, also referred to as papillary syncytial change, often found in association with endometrial breakdown and bleeding, especially in non physiological conditions. When prominent, this morphological change results in a pattern of eosinophilic endometrial cells, arranged in a pseudopapillary pattern that can resemble cellular changes found in atypical endometrium.<sup>4</sup>

#### 3.1. Immunohistochemistry

Some cases of eosinophilic syncytial change show atypical cytologic features and hence may mimic endometrial carcinoma. Immunohistochemistry can help differentiate between the two. The Ki-67 labeling index, examined in a small series of cases including eosinophilic cell change, atypical endometrial hyperplasia and endometrial adenocarcinoma, was 1.3% in eosinophilic syncytial change cases, 15.8% in atypical endometrial hyperplasia, and 42.6% in endometrial adenocarcinoma. The mitotic index measured from pHH3 immunostaining, in a small series of cases including eosinophilic cell change, atypical endometrial hyperplasia and endometrial adenocarcinoma, was found to zero in all cases of endometrial syncytial change, while it was 2.3% in atypical endometrial hyperplasia and 4.8% in endometrial adenocarcinomas.<sup>4</sup>

Since the eosinophilic syncytial change tends to form pseudopapillary and glandular formations, they are often

regarded as papillary syncytial change and sometimes pose challenges in differentiating them from serous papillary carcinomas. One study analysed immunohistochemical markers PTEN and p53 to serve this purpose. All cases of eosinophilic syncytial change exhibited moderate or strong staining for PTEN, while PTEN staining was absolutely negative in all endometrial serous carcinomas. Around 54% of cases of eosinophilic cell change show weak focal positive staining for p53, while all cases of endometrial serous carcinomas showed intense positivity for p53. Also, the Ki-67 index was low and was found in only 32% of cases with eosinophilic syncytial change but was high in all of the cases of endometrial serous carcinomas.<sup>5</sup>

#### 4. Conclusion

In conclusion, we have presented a case of endometrial eosinophilic metaplasia in a 47-year-old patient along with a brief discussion on immunohistochemical characteristics of eosinophilic syncytial change that could help pathologists to differentiate them from malignancies in challenging scenarios.

#### 5. Source of Funding

None.

#### 6. Conflict of Interest

The authors declare no conflict of interest.

#### References

1. Hendrickson MR, Kempson RL. Endometrial epithelial metaplasias: proliferations frequently misdiagnosed as adenocarcinoma. *Am J Surg Pathol.* 1980;4(6):525–42.
2. Moritani S, Kushima R, Ichihara S. Eosinophilic cell change of the endometrium: a possible relationship to mucinous differentiation. *Mod Pathol.* 2005;18:1243–8.
3. Nicolae A, Preda O. Nogaes FF Endometrial metaplasias and reactive changes: a spectrum of altered differentiation. *J Clin Pathol.* 2011;64:97–106.
4. Shah SS, Mazur MT. Endometrial eosinophilic syncytial change related to breakdown: immunohistochemical evidence suggests a regressive process. *Int J Gynecol Pathol.* 2008;27:534–8.
5. Haley SL, Malhotra RK, Qiu S, Eltorky ME. The immunohistochemical profile of atypical eosinophilic syncytial changes vs serous carcinoma. *Ann Diagn Pathol.* 2011;15(6):402–6.

#### Author biography

**Karthikesh Jayakumar**, Associate Professor

**Barani Karikalan**, Senior Lecturer  <https://orcid.org/0000-0002-5751-346X>

**Srikumar Chakravarthi**, Professor

**Cite this article:** Jayakumar K, Karikalan B, Chakravarthi S. Eosinophilic endometrial metaplasia - case report and brief literature review on its immunohistochemical characteristics. *Indian J Pathol Oncol* 2021;8(4):512-514.