ORIGINAL ARTICLE

Frequency of Metaplastic Change in Benign Endometrial Curettage Specimen and its Histological Variants

Mohammad Sajjad Khattak[1], Mohammad Akram Khattak[2], Sania Tanveer Khattak[3]

ABSTRACT

Objective: The objective of this study was to see the frequency and histological variants of endometrial metaplastic changes in benign endometrial curettage.

Study Design: Cross sectional descriptive study.

Place and Duration of Study: The study was conducted at Pathology department of Bannu Medical College. The duration was five years. From January 1st, 2011 to December 31st, 2015.

Materials and Methods: In this study a total of 530 endometrial curettage specimen were analysed. All the data was collected during these five years from Pathology department register and the author was actively involved in examination and histopathology reporting. All benign endometrial curettage specimen from both pre and post-menopausal age were included. Autolysed, malignant and insufficient biopsy specimen were not included. A minimum of one and maximum of three blocks were prepared. Two to four 5 micron thick sections were taken, stained with H&E and PAS where required. Slides prepared were mounted and reported by Histopathologist (Author). The data was analysed in Statistical Package for Social Sciences (SPSS) version 20 for frequencies with percentages and mean with standered deviation.

Results: A total of 530 endometrial samples were collected in this study with mean age of 33.65 years and age range was from 21 to 63 years. The incidence of endometrial metaplasia was 4.90% amongst 530 endometrial samples. The metaplastic changes in order of frequency were tubal metaplasia followed by squamous metaplasia, clear cell metaplasia, ciliated cell metaplasia and mucinous metaplasia.

Conclusion: Endometrial metaplasia is a recognized histological entity in endometrial curettage specimen with variable histological presentation. In this study tubal metaplasia was the commonest metaplasia followed by squamous metaplasia.

Key Words: *Endometrial Curettage, Proliferative Endometrium, Morules, Tubal Metaplasia, Histopathology.*

Introduction

Endometrial metaplasia means replacement of normal endometrial epithelium by another type of benign epithelium.[1] The epithelium derived from mullerian duct which lines most of the female genital tract have the capacity to differentiate into different types of epithelium such as, ciliated, mucinous, endometrioid, transitional, clear and squamous cells types.[2] The endometrium show a spectrum of metaplastic changes. In endometrial metaplastic changes (EMC) there occurs both epithelial as well as stromal metaplasia.[3] Their epithelial or stromal components are replaced by benign homologus or heterologus elements inappropriate to the site.[4,5]The epithelial EMC occurs frequently, where as stromal EMC are uncommon. The endometrial metaplasia can occur in any age group.[6] The EMC terminology is still confusing as some of these metaplasia are merely cytoplasmic alterations better defined as cellular adaptation/changes rather than true metaplasia. This altered differentiation in endometrium is either due to degenerative/ reparative, hormonal or neoplastic processes and therefore must be mentioned in histopathology reports separate from from EMC. This needs further work up, so that metaplasia and altered cellular differentiation may be reported separately.[7] This justification of this study is to provide awareness as well as to address and resolve the terminology gap between endometrial metaplasia and altered cellular differentiation in future.[8]

Presence of EMC can significantly alert the reporting pathologist regarding their association with other primary lesions both benign as well as malignant.

[1]*Department of Pathology/Community Medicine*[2]
Bannu Medical College Bannu, KPK
[2]*Department of Gynae/Obs*
Saidu Medical College Swat, KPK

Correspondence:
Dr. Mohammad Sajjad Khattak
Associate Professor, Pathology
Bannu Medical College, Bannu
E-mail: sajjadkhattak66@gmail.com

Funding Source: NIL; Conflict of Interest: NIL
Received: Sep 24, 2016; Revised: Feb 17, 2017
Accepted: Feb 18, 2017

Factors involved in EMC are multiple physiological, reactive, neoplastic or genetic abnormalities. EMCs occur in pure form or in combination with other histological types in the same specimen.[9]

There are multiple risk factors of EMCs may include the following:

Pubertal hormonal imbalance may induce metaplastic transformation, abnormal endometrium including hyperplasia, endometritis, endometrial carcinoma, polycystic ovarian syndrome, tuberculous endometritis, foreign body such as intrauterine contraceptive device and chronic trauma.[10]

The significance of EMCs may present an indirect evidence of the presence of a causative factor. The underlying cause of EMCs may present significant signs and symptoms or complications and treatment may be required for the underlying cause of metaplasia in endometrium. The prognosis is related to the underlying cause and its treatment. [11]

There are different types of endometrial metaplasias, the most common is tubal metaplasia followed by squamous metaplasia, hobnail cell metaplasia, arias stella reaction/change, esinophilic cell change and mucinous metaplasia. Other rare form of stromal metaplasia like clear cell metaplasia, cartilaginous, osseous, glial and smooth muscle can also be seen in endometrium.[12]

The aim of this study was to see the frequency and histological variants of endometrial metaplastic changes in the southern districts of Khyber Pakhtunkhwa and to compare these with other studies.

Materials and Methods

This cross sectional descriptive study was carried out in Pathology Department Bannu Medical College Bannu KPK. Pakistan. The duration of this study was five years, from January 1st 2011 to December 31st 2015. The sample size was 530 endometrial curettage specimen. All the endometrial curettage samples were collected in 10% buffered formalin. The inclusion criteria was all endometrial curettage specimen of pre and postmenopausal age group, exclusion criteria was autolysed, insufficient and malignant specimen. All the specimen were overnight fixed in 10% buffered formalin, processed in various grades of alcohol, xyelene and wax. A minimum of one and maximum of three blocks were prepared. Two to four 5 micron thick sections were taken, stained with H&E and PAS where required. Slides prepared mounted and reported by single Histopathologist. Data was analysed in Statistical Package for Social Scences (SPSS) version 20 for frequencies with percentages and mean with standard deviation.

Results

A total of 530 endometrial curettage were included in this study. The mean age was 33.65 years with age range from 21 to 63 years. The incidence of endometrial metaplasia was 4.90% (n=26) cases amongst 530 endometrial curettage samples. The most common age group in metaplastic changes was between 46-55 years 34.61% (n=09) cases followed by 36-45 years 30.76% (n=08) cases. Table I. Tubal metaplasia was the commonest 34.61% (n=9) followed by squamous metaplasia 19.23% (n=5), mucinous 11.53% (n=3), hobnail 11.53% (n=3), clear cell 11.53% (n=3), eosinophillic 7.69% (n=2) and arias stella reaction 3.86% (n=1) cases. Table II.

Table I: Distribution of age groups in endometrial metaplasia (n=26)

Age group in years	No. of metaplasia cases	Percentages
16-25	04	15.38%
26-35	03	11.53%
36-45	08	30.76%
46-55	09	34.61%
>56	02	7.69%

Table II: Frequency of histological variants of endometrial metaplasia (n=26)

Type of metaplasia	Number of cases	Percentages
Tubal metaplasia	09	34.61%
Squamous metaplasia	05	19.29%
Mucinous metaplasia	03	11.53%
Hobnail cell metaplasia	03	11.53%
Clear cell metaplasia	03	11.53%
Eosinophilic metaplasia	02	7.69%
Arias Stella reaction	01	3.84%
Total	26	100%

Discussion

Endometrial metaplastic changes (EMCs) are frequently overlooked and misdiagnosed. EMCs by itself does not suggest a medical condition or an abnormality. However the cause of metaplasia may be of clinical significance and may require further

investigation. Also the prognosis is directly related to the underlying cause and its treatment.[13]

EMCs associated with atypical cytological findings and their persistence on repeated histopathological examination, may needs a careful workup to determine the underlying cause.[14]

Again it is important to note that atypical changes does not always mean an association with malignancy, such atypical changes may occur in benign conditions as well.[15]

In this study the age range was 21 to 63 years. In study conducted by Firoiu et al[16] the age range was from 22-75 years. Another study conducted by Simon et al[17] in Taiwan in 2011 the age range was 24-85 years. All almost have the same age range.

In this study the most common age group was 46-55 years followed by 36-45 years with 34.61% and 30.76% cases respectively. In study conducted by Natheeu et al[18] the most common age group was 40-49 years followed by 30-39 years with 46.02% and 22.22% cases respectively. Another study conducted by Benyamen et al12 the common age group was 30-39 years with 47% cases followed by 40-49 years with 26% cases.

In this study the frequency of endometrial metaplasia was 26 (4.90%) cases amongst 530 endometrial curettage, where as in study conducted by Natheeu et al17 the frequency of metaplasia was 11.62% higher than this study, another study conducted by Benyamen et al12 show a very high frequency 60% of metaplastic changes. The reason for these frequencies in these both studies is due to the estimation of metaplasia in both benign as well as malignant lesions, where as in the present study the metaplasia is only estimated in benign endometrial lesions. In the later study of Benyamen et al12 metaplastic changes of cervix are also included.

In this study the endometrial metaplasia in order of frequency was tubal metaplasia 34.61% (n=9) followed by squamous metaplasia 19.23% (n=5), mucinous 11.53% (n=3), hobnail 11.53%(n=3), clear cell 11.53% (n=3), eosinophillic 7.69%(n=2) and arias stella reaction 3.86%(n=1) cases. In a study conducted by Natheeu et al17 the frequency order was tubal metaplasia 52.38% followed by squamous metaplasia 17.46%, hobnail metaplasia 12.695, arias stella reaction 7.93%, eosinophilic metaplasia 4.76% and mucinous metaplasia in 1.58% cases. Another study conducted by Firoiu et al16 show tubal metaplasia in 40.11% followed by eosinophillic metaplasia in 29.80%, squamous metaplasia in 21.72%, clear cell metaplasia in 6.40% and mucinous metaplasia in 1.94% cases. There are differences in the frequencies of different metaplasia in these studies. The reasons may be either variation in diagnosis and treatment modalities or background differences endometrial disease in different areas of the world.

Conclusion

Endometrial metaplasia is a recognized histological entity in endometrial curettage specimen with variable histological presentation. In this study tubal metaplasia was the commonest metaplasia followed by squamous metaplasia.

REFRENCES

1. Rosai J. Female Genital Tract. In: Rosai and Ackerman's Surgical Pathology. 10th edn. St. Louis: Elsevier Mosby. 2013: 1878-88.
2. Kumar V, Abbass AK, AsterCJ. Female genital tract. In: Robin's pathological basis of diseases. 9th ed. Philadelphia: WB Saunders. 2013; 628-704.
3. Kaur P, Kaur A, Suri AK, Sidhu H, Hendrickson MR, Kempson RL. A two year histopathological study of endometrial biopsies in a teaching hospital in Northern India. Indian Journal of Pathology and Oncology, 2016; 3: 508-19.
4. Hendrickson MR, Kempson RL. Endometrial epithelial metaplasias: proliferations frequently misdiagnosed as adenocarcinoma. Am J Surg Pathol. 1980; 4: 525-42.
5. Zaman SS, Mazur MT. Endometrial papillary syncytial change. A nonspecific alteration associated with active breakdown. Am J Clin Pathol. 1993; 99: 741–5.
6. Gersell DJ. Endometrial papillary syncytial change. Another perspective, Am J Clin Pathol. 1993; 99: 656-7.
7. Rorat E, Wallach RC. Papillary metaplasia of the endometrium. Clinical and histopathologic considerations. Obstet Gynecol. 1984; 64: 90-2.
8. Lin MC, Lomo L, Baak JP. Squamous morules are functionally inert elements of premalignant endometrial neoplasia. Mod Pathol. 2009; 22: 167-74.
9. Chiarelli S, Buriticá C, Litta P, Ciani S, Guarch R, Nogales FF. An immunohistochemical study of morules in endometrioid lesions of the female genital tract: CD10 is a characteristic marker of morular metaplasia. Clin Cancer Res. 2006; 12: 4251-6.
10. Suzuko Moritani, Ryoji Kushima, Shu Ichihara, Hidetoshi Okabe, Takanori Hattori, Kobayashi TK, et al. Eosinophilic cell change of the endometrium: a possible relationship to mucinous differentiation. Modern Pathology. 2005; 18: 1243–8.
11. McCluggage WG, Desai V, Manek S. Tamoxifen-associated

postmenopausal adenomyosis exhibits stromal fibrosis, glandular dilatation and epithelial metaplasias. Histopathology. 2000; 37: 340-6.
12. Banyameen M, Masood I, Aiman A, Yasir M, Mushtaq I, Verma V. Study of metaplastic lesions of different parts of the female genital tract: A prospective study. The Internet Journal of Pathology. 2010; 2: 7.
13. Carlson JW, Mutter GL. Endometrial intraepithelial neoplasia is associated with polyps and frequently has metaplastic change. Histopathology 2008; 53: 325-32.
14. Amin A, Ali A, Amin Z, Sani FN. Justification for hysterectomies and frequency of histopathological lesions of hysterectomy at a teaching Hospital in Peshawar, Pakistan. Pak J Med Sci. 2013; 29: 170–2.
15. Firoiu C, Simionnescu C, Stanculescu D, Chexnoiu F, Stepan A. Histopathological metaplasias in endometrial hyperplasia. Current Health Sciences Journal. 2009; 35: 44-9.
16. Neethu GV, Pawer JG. Morphology of endometrial metaplasias and related reactive changes: A Prospective study. 2014; 4: 1-4.
17. Nicolae A, Preda O, Nogales FF. Endometrial metaplasias and reactive changes: a spectrum of altered differentiation. J Clin Pathol. 2011; 64: 97-106.
18. Simon RA, Peng SL, Liu F, Quddus MR, Zhang C, Steinhoff MM, et al. Tubal metaplasiaof endometrium with cytologic atypia: An analysis of P53, Ki-67, TERT and long tern follow up.Modern Pathology. 2011; 24: 1254-61.