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# Common lesions of uterus and cervix with mast cell profile

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**ABSTRACT**

The present study included a total of 109 cases of which leiomyomas were 15 cases, adenomyosis 6 cases, proliferative and secretory phase endometrium 6 cases each, endometrial polyp 6 cases, endometrial hyperplasia 6 cases, atypical hyperplasia 6 cases, endometrial carcinoma 6 cases, endocervicitis 6 cases, cervical dysplasias 12 cases, carcinoma cervix 10 cases, vesicular mole 6 cases, choriocarcinoma 6 cases, products of conception 6 cases. The mast cell count was significantly increased in cervicitis as compared to cervical carcinoma. Endometrial polyps showed a significant increase of mast cells ($p<0.05$). In leiomyomas mast cells were significantly high in intramural as compared to submucosal and subserosal types. Choriocarcinoma showed significant increase in mast cells as compared to vesicular mole.

**Keywords:** Mast cell count, uterus, cervix.

## Introduction

Mast cells are widely distributed in the human body and play a vital role in various inflammatory and immunological reactions, linking humoral and cell mediated phases of processes. Cajal noted the intimate association of mast cells with some epithelial tumors and suggested that mast cells might be important in host defence mechanism. Hemlin reported variation in mast cell population around edges of primary tumors and metastatic nodes. Mast cells are prominently increased in the lesions of breast like mammary dysplasia, fibroadenoma and ductal carcinomas. The mast cells are known to be influenced by hormonal alterations [1].Comparison of mast cell densities in benign and malignant conditions of uterus and cervix showed an increase in inflammatory process, while in carcinomas there is decrease in number to total absence. Mast cells are reported to be increased in leiomyoma of uterus [2].The literature on mast cell profile in uterine lesions is sparse. Some authors have documented an alteration in carcinoma cervical dysplasias and carcinomas, endometrial hyperplasia and carcinomas. Considering this, the present study attempts to observe for alteration in mast cells in some common uterine and cervical lesions and its possible significance in diagnosis and prognosis.

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## Aims and objectives

To evaluate, compare and study the significance of mast cells both benign and malignant lesions of uterus and cervix.

## Materials and methods

The present was carried out in the department of pathology, MR Medical College, Kalaburagi. A careful study of specimens of cervical biopsies, endometrial biopsies and hysterectomy specimens received with relevant clinical data was done. Paraffin sections were prepared and stained with Haematoxylin and Eosin for routine examination and 1% aqueous Toluidine Blue for mast cells. Categorisation of the lesions was done on histological grounds. Number of mast cells in 10 consecutive high power fields (HPF) were counted in all sections and tabulated. Results were statistically evaluated. Metachromasia of the connective tissue was recorded as present or absent.

## Observations

A total of 109 cases were evaluated, the mast cells were counted per HPF. The spectrum of the lesions, age distribution and mast cell profile is given in the table. On counting the mast cells, in various cervical lesions, a significant increase was noted in chronic cervicitis as compared to endocervicitis ($p<0.05$). High mast cell counts were noted in mild cervical dysplasias. The mast cell count decreased successively as grade of dysplasia was more (Fig.1). Least counts were seen in severe dysplasia and carcinoma cervix. Cases with

koilocytosis showed more mast cells.In endometrial lesions, there was not much change in atypical hyperplasia and typical hyperplasia where the mast cell range was 10-39/10HPF. Endometrial carcinoma showed low count of 1-6/10HPF. Proliferative phase showed increased mast cell count as compared to secretory phase, though not statistically significant.The endometrial polyp showed statistical increase in counts ($p<0.05$). Polyps were associated with ulceration and inflammation.Leiomyoma when analysed showed an increased count in intramural type (Fig.2), followed by submucosal and subserosal type. Adenomyosis showed a range o 13-28/10HPF.

**Table 1: Types of lesions,age distribution and mast cell count**

| Type of lesion | Number of cases | Age in years range (Average) | Mast cell count /10HPF (mean) |
|---|---|---|---|
| **Myometrial lesions** | | | |
| **Leiomyoma** | 15 | 30-55 (40.1) | 45-126 (85.5) |
| **Adenomyosis** | 6 | 40-55 (48) | 13-28 (18.5) |
| **Endometrial lesions** | | | |
| **Endometrial polyp** | 6 | 20-52 (35.5) | 64-130 (80) |
| **Endometrial carcinoma** | 6 | 55-63 (57.5) | 1-6 (2.8) |
| **Atypical hyperplasia** | 6 | 24-55 (38.1) | 11-28 (16.3) |
| **Typical hyperplasia** | 6 | 19-60 (39.7) | 10-27 (17.5) |
| **Proliferative endometrium** | 6 | 22-38 (27.6) | 15-23 (18.6) |
| **Secretory endometrium** | 6 | 20-40 (28.58) | 8-13 (10.3) |
| **Cervical lesions** | | | |
| **Chronic cervicitis** | 6 | 30-55 (39.6) | 61-96 (70.6) |
| **Endocervicitis** | 6 | 30-45 (36.4) | 51-77 (63) |
| **Cervical dysplasia** | 12 | 30-60 (39.8) | 18-66 (42) |
| **Carcinoma cervix** | 10 | 35-85 (49.6) | 13-28 (16.5) |
| **Trophoblastic lesions** | | | |
| **Vesicular mole** | 6 | 28-55 (36.4) | 2-6 (03) |
| **Choriocarcinoma** | 6 | 22-38 (30) | 15-29 (24) |
| **Products of conception** | 6 | 18-30 (24.5) | 6-11 (08) |

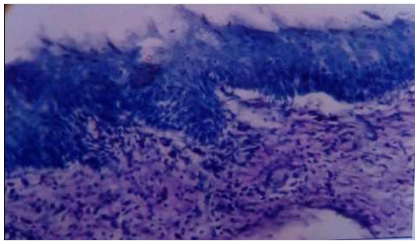

**Fig1:Cervical dysplasia showing mast cell infiltration Toluidine Blue stain x400**

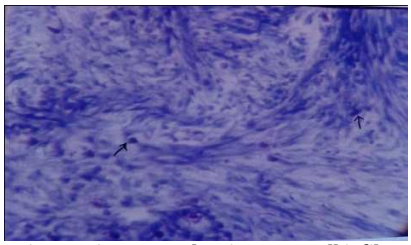

**Fig 2: Leiomyoma showing mast cell infiltration Toluidine Blue stain x400**

Analysis of the trophoblastic lesions showed increase in choriocarcinoma, as compared to vesicular mole and products of conception.The general observation that could be made was that, mast cells were significantly increased in inflammatory and benign lesions as compared to the malignant lesions in cervix and endometrium. Intramural leiomyomas showed high mast cell count. In the trophoblastic lesions, choriocarcinoma showed a higher count as compared to hydatidiform mole and products of conception.

## Discussion

The present study on mast cell profile is a preliminary approach to profile into the mast cell alterations in some common uterine and cervical lesions. Mast cells with a battery of crucial chemical mediators and

substances in their typical metachromatic granules are known to play a role in health and various disease states. Because of the multiple roles of mast cells in edema formation, angiogenesis and fibrogenesis, it is logical to infer that mast cell alteration could be found in various inflammatory and neoplastic disorders. The numbers of cases in the present study though not very large, but are sufficient to draw a logical conclusion which might prove to be of additional diagnostic or prognostic value. Majeed SK [3] studied distribution of mast cells in various organs of mice and showed that there is increased number of mast cells in the inflammatory lesions of cervix. Jain PC *et al*. showed an increase of mast cells in inflammatory processes.The observation of progressively decreasing mast cell counts from mild dysplasias to severe dysplasias and invasive carcinomas, suggests that mast cell count appears inversely proportional to the degree of dysplasia and a good prognostic indicator. Mast cells by virtue of secretions can cause vasodilatation, edema with protein rich exudate. Perhaps such a milieu favours tumor invasion and spread. Heparin has been shown to suppress lymphocyte function leading to inhibition of immunity. Mast cell infiltration in neoplasia is thought to be an effect rather than a cause. On comparing the mast cells in endometrial polyp with that of proliferative/secretory endometrium, there is a significant increase ($p<0.05$). Drudy *et al*. [4] showed no significant change in mast cell counts in proliferative and secretory and endometrium, which was a similar finding in our study. They suggested that presence of mast cells would indicate benign nature of endometrial lesions and this may important in assessment of malignant and premalignant lesions. It was observed that there was a significant increase in mast cell count in intramural leiomyoma as compared to submucosal and subserosal types. It has been concluded from various studies that hormones especially estrogen influences the mast cell activity in uterus and cervix. Mast cells in adenomyosis were less (18.5), this could be due to the fact that glands in adenomyosis do not frequently show cyclical activity.Mast cell count in vesicular mole was significantly decreased as compared to choriocarcinoma. It is known from the previous studies that mast cells are found in the connective and chorionic villi of placenta.

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**Conflict of Interest: None**

## Conclusion

Mast cell response does occur in various uterocervical lesions. Mast cell profile may be an additional diagnostic or prognostic tool in different uterocervical diseases.

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