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STUDY OF DEGENERATIVE CHANGES IN UTERINE LEIOMYOMAS

Ramesh B.H¹, Shashikala P², Kavita G.U², Doddikoppad³, Chandrasekhar H.R³

¹Department of Pathology, Mysore Medical College and Research Institute, Mysore

²Department of Pathology, S. S. Institute of medical sciences and research centre, Davangere

³Department of Pathology, J.J.M. Medical College, Davangere. Karnataka

E-mail of corresponding author: drrameshpath@rediffmail.com

ABSTRACT

Leiomyomas are the commonest tumors in female genital tract and in the body as a whole. These benign tumors of smooth muscles occur in 20-30% females in the reproductive age group and tend to be symptomatic. A study of 314 uterine leiomyomas revealed some form of degeneration in 45.79 % of specimens. Hyaline degeneration occurred most frequently, accounting for 94.11% of all types of degeneration. Cystic change was observed in 3.5 % of cases. Calcification occurred in 5.15 % of cases, Red degeneration in 0.74% of cases whereas sarcomatous change was not encountered at all.

INTRODUCTION

Uterine leiomyomas, commonly referred to as fibroids are the most common benign tumor of the female genital tract. However, their true prevalence is probably underestimated, as the incidence at histology is more than double the clinical incidence.¹

Regardless of their generally benign euplastic character, uterine fibroids are responsible for significant morbidity in a large segment of the female population. Although the cause or causes of fibroids are unknown, the scientific literature now contains a sizeable body of information pertaining to the epidemiology, genetics, hormonal aspects, and molecular biology of these tumors.²

We have made an attempt to study the various degenerative changes that occur in leiomyomas.

AIM AND OBJECTIVES

To know the prevalence and various types of degenerative changes encountered in leiomyomas.

MATERIAL AND METHODS

This is a prospective study of degenerative changes encountered in leiomyomas over a period of two years at a tertiary hospital in Davangere, which is located in the central part of Karnataka. A total of 1830 specimens comprising of hysterectomies (1827) and myomectomies (3) were submitted to gross

and microscopic examination. Of these, 314 specimens had leiomyomas which were included for the study. Specimens were fixed in 10% formalin and studied in detail to know the size, site, consistency, appearance and secondary changes. Apart from taking routine sections, particular attention was paid to the sampling of areas showing softening and or discoloration. Tissues were processed routinely and 4-5 μ thick sections were taken from paraffin blocks. Routine sections stained with hematoxylin and eosin were thoroughly studied microscopically to identify the various secondary changes like hyaline degeneration, cystic degeneration, calcification, red degeneration, myxomatous, mucoid, necrotic change, fatty degenerations and sarcomatous changes.

RESULTS

Of the 314 specimens of leiomyoma studied, associated degenerative changes were seen in 136 leiomyomas (43.31%).

Hyaline change, the commonest form of degeneration, was seen in 128 (94.11%) of the 136 leiomyomas, whereas the remaining (5.88%) were associated with other degenerative changes. On histologic examination, typical hyaline change is characterized by diffuse homogenous glassy pink structure with marked acellularity.

Grossly the mean size of these leiomyomas was 4.8cms.

Cystic change (characterized by formation of cystic spaces of varying sizes but without an epithelial lining), which is an invariable accompaniment of hyaline change was observed in 11 cases (8.09%). Eight (5.88%)

of these, were also associated with hyaline change. In five (4.11%) leiomyomas, a large part of the tumor was cystic containing colorless or straw colored fluid.

Six (4.41%) leiomyomas showed **mucoid degeneration**, which also resulted in cystic change.

Out of 7(5.15%) leiomyomas with **calcareous degeneration**, 4 were detected grossly and 3 showed microscopic foci of purplish amorphous lake produced by haematoxylin.

These gave a gritty feeling while sectioning the tumor.

Completely calcified leiomyoma was observed in one (0.74%) case, so called **womb stone**.

Fatty change was observed in two cases (1.47%)

Leiomyoma with **hemorrhage** was observed in 2 cases (1.47%), which included a case of red degeneration that occurred in absence of pregnancy.

Myxoid change and Necrosis were also found in 2 cases (1.47%) each.

Macroscopically **leiomyoma with infection** was not evident, but was detected microscopically in one case (0.74%). Leiomyoma with **infarction** was discernible in one (0.74%) case. However, there was no case of sarcomatous degeneration in the present study.

Variants of leiomyoma constituted 0.96% of total 314 cases, which included one case each of cellular, epitheloid & symplastic leiomyomas.

Table1: The incidence of degenerative changes

Type of degeneration	No of cases	Percentage
Hyaline change	128	94.11
Cystic	11	8.09
Calcification	7	5.15
Mucoid	6	4.41
Fatty	2	1.47
Myxomatus	2	1.47
Hemorrhage	2	1.47
Necrosis	2	1.47
Infection	1	0.74
Infarction	1	0.74
Sarcomatous	Nil	Nil

DISCUSSION

Degenerative changes in leiomyomas are considered to be due to inadequate blood supply, and the type of degenerative change seems to depend on the degree and rapidity of onset of the vascular insufficiency^{3, 4}. Degenerative changes in various studies varies from 65% to 100%^{3,5}.

Hyaline change:

It is generally accepted that hyaline change is the commonest form of degeneration seen in leiomyomas^{3, 5, 6}. In the present study also it was the commonest form of degeneration encountered.

Table 2: Hyaline and cystic change in other studies

Studies	Hyaline change	Cystic change
Persaud & Arjoon ³	63%	4%
Zalaudek and Norris ⁶	60%	4%
Present study	41.71%	3.5%

The mean size of leiomyomas with hyaline change was 4.8 cms.

This observation is in accordance with Shaw (1971), who stated that some degrees of hyaline degeneration is present in all leiomyomas more than 4 cms diameter⁷.

The figures quoted in most series are undoubtedly an underestimation of the real incidence of this change, since minor degrees of degeneration are either unobserved or are disregarded³.

The incidence of leiomyomas with **calcification** was 2.22% which is consistent with other studies by Reddy & Malathy (1963, 2.5%), Torpin et al (1942, 2.4%)^{3, 5}.

We report a completely calcified leiomyoma (so called Womb stone) in one case.

Fatty degeneration in leiomyomas is very uncommon and its pathogenesis is somewhat controversial^{3, 4, 8}. Starry (1925) believes that it is due to lipomatosis of the stroma of the uterine tumor, whereas Willis (1958) states that the adipose tissue is formed by metaplasia⁷. **Fatty change** was observed in 0.64% of cases, similar to studies by Persaud & Arjoon (1970) & Reddy & Malathy (1963,) who reported low incidence of fatty change^{3, 5}. It should be differentiated from uterine lipoma, a rare tumor of obscure histogenesis³.

Jeffcoate (1967) considered myxomatous degeneration in leiomyomas to be rare, while Persaud & Arjoon (1970) reported higher incidence of 12%³. **Myxoid change** was observed in 2 cases (0.64%) in our study.

Myomas with **muroid degeneration** (1.91%) also result in cystic change in the study. Persaud & Arjoon³ (1970) reported higher incidence of 5.36%.

Leiomyoma with hemorrhage was reported in 2 cases in contrast to Norris & Zaloudek (1981)⁶ observation of 11%.

One case of red **degeneration** (0.74%) showed hemorrhage with hyaline change microscopically, and was not associated with pregnancy in our study. Rosario pinto 1968, (1.2%), Persaud & Arjoon 1970 (3.3%), and Reddy & Malathy 1963 (2.5%),

found low incidence of red degeneration in patients without pregnancy^{3, 5, 6}. Faulkner 1947 estimated the frequency of red degeneration in leiomyomas to be 7-8%. Boyd reported that among 38 examples of red degeneration operated upon, 29% were associated with pregnancy³.

Sarcomatous change in leiomyomas is rare. Corscaden & Singh indicated in their study that the true incidence of sarcoma developing within uterine leiomyomas is not more than 0.13%, and probably as low as 0.04%. Various other studies have also reported low incidence of sarcomatous change^{3, 8}. However, there was no case of sarcomatous degeneration in our study.

CONCLUSION

Leiomyomas are the most common benign tumors of the uterus.

Hyaline change is the commonest degenerative change encountered and also coexists with other degenerative changes.

Since leiomyomas are known to occur even in young reproductive age group, proper understanding, knowledge, intervention as well as medical advice regarding the tumor can help in preventing depression and anxiety related to the disease in many patients.

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