Original Article

Histopathological Evaluation of Myometrial Lesions of the Uterus in Nnewi Teaching Hospital: (Five-Year Retrospective Study)

I. F. Ezejiofor[1], Olaofe O.O[2], Ogbu C. Chika[1], F. E. Menkiti[1], A. S. Enesi[1], E. G. Ike[1]

[1]Department of Histopathology, Nnamdi Azikiwe University Teaching Hospital, Nnewi, Anambra State, [2]Department of Morbid Anatomy and Forensic Medicine, Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife, Osun State, Nigeria

Abstract

Introduction: A 5-year retrospective study to evaluate the lesions of myometrium (both nonneoplastic and neoplastic) in the hysterectomy and myomectomy specimens received in our institution. **Aim:** This research will serve as a baseline study of different myometrial lesions in the histopathology department of Nnamdi Azikiwe University Teaching Hospital (NAUTH) Nnewi. This is the first of such a study since the institution of the department**.** The study will also highlight myometrial lesions in relation to the age and mode of presentations as well as histopathological features. **Methodology:** The pathology report forms in the histopathology department NAUTH, Nnewi, were retrieved, and relevant information was extracted. A total of 290 cases of myometrial lesions were obtained within the study period, of which 283 cases that fulfilled the inclusion criteria were analyzed. The processed tissues and the slides stained with regular histochemical stain (hematoxylin and eosin) technique in this 5-year study period were reviewed by the above researchers using multi-headed microscope (®CARL ZEISS). **Results:** The myometrial lesions observed include leiomyoma, leiomyomata, leiomyosarcoma, leiomyoma coexisting with adenomyosis, adenomyosis, invasive carcinosarcoma, and hemorrhagic necrosis following uterine rupture. The age range at the presentation was between 10 and 80 years. The mean age for leiomyoma was 39.24 ± 8.41 standard deviation (SD), whereas the mean age for adenomyosis was 43 ± 9.86 SD. Leiomyoma was the most common myometrial lesion with a frequency of 93.9% (266 cases) and show degenerative changes in 139 cases (52.%) Followed by coexisting leiomyoma with adenomyosis which had a frequency of 3.9% (11 cases). A total of 184 leiomyoma cases with a frequency of 69.2% occur in multiple nodules. Adenomyosis alone had a frequency of 3.18% (9 cases). Therefore, the total number of adenomyosis in this research was 20 cases. Menorrhagia was the most common clinical symptoms with a frequency of 31.4% (82 cases). Leiomyosarcoma had a frequency of 1.77% (5 cases), whereas the least represented were hemorrhagic necrosis and invasive carcinosarcoma with frequencies of 2 (0.8%) and 1 (0.4%), respectively. **Conclusion:** (1) Leiomyoma is the most common myometrial lesions and tends to coexist in a few cases with adenomyosis while majority of them show degenerative changes. (2) Menorrhagia is the most common presenting symptoms of myometrial lesions while the histologic examination is the only tool to differentiate these myometrial lesions with similar clinical symptoms.

Keywords: Adenomyosis, invasive carcinosarcoma, leiomyoma, leiomyosarcoma, menorrhagia

Introduction

The majority of specimens in the histopathology department were gynecological cases. The uterus is one of the most important female reproductive organ, and it is under the influence of hormones.[1] Myometrium is entirely composed of smooth muscle bundles that are predisposed to a gamut of neoplastic and nonneoplastic lesions.

The uterine neoplasms are principally divided into homologous (pure mesenchymal tumors) and heterologous sarcomas. Pure mesenchymal or homologous sarcomas are composed of normal tissue constituent of the uterus, of which leiomyomas are the most common type.[1,2] Uterine leiomyomas

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Address for correspondence: Dr. I. F. Ezejiofor, Department of Histopathology, Nnamdi Azikiwe University Teaching Hospital, Nnewi, Anambra State, Nigeria. E-mail: ogify68@yahoo.com

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are the most common tumor in women. It constitutes a major public health cost to the community in terms of outpatient attendances and hospital costs for surgery of this disease.[3] Leiomyoma occurs in 20%–30% females of reproductive age group and is majorly asymptomatic but may present with dysmenorrhea, menorrhagia, and mass or pressure effect.[4,5] The growth of these tumors are strongly associated with unopposed estrogen excess which however regresses after menopause.[6]

The malignant counterpart of leiomyoma is leiomyosarcoma.[1] Leiomyosarcoma though not so common may present like benign leiomyoma clinically.[7] Therefore, histopathological evaluation of these lesions is very important in making appropriate diagnosis and differentiating them from a slimily variants of benign lesions ranging from symplastic/atypical, cellular or mitotically active leiomyoma, low-grade, or high-grade endometrial stroma sarcoma.

Other uterine mesenchymal neoplasms are heterologous sarcomas which are quite rare and composed of tumors such as angiosarcoma, rhabdomyosarcoma, osteosarcoma, chondrosarcoma, alveolar soft-tissue sarcoma, and liposarcoma.[1,2]

Another common lesion of the myometrium is adenomyosis with a histologic frequency that varies between 5% and 70%.[8] It may present clinically with menorrhagia and dyspmenorrhea just like leiomyoma.[8] Adenomyosis is one of the lesions that is exclusively diagnosed by histology because of clinically similarity with leiomyoma.

Therefore, histopathology has immense importance in the documentation, diagnosis, and evaluating the differential diagnosis of myometrial lesions since their management is quite different.

Methodology

This retrospective study spanned over a period of 5 years (January 2010–December 2014) and involved 283 cases whose demographic data were complete in the histopathology report booklet of Nnamdi Azikiwe University Teaching Hospital (NAUTH) Nnewi Anambra State, Nigeria. Female within this study period whose histologic report forms include all required information such as age, specimen sites, clinical diagnosis, clinical symptoms, the type of surgery, as well as histology diagnosis of myometrial lesions were included in this study. The cases were also selected independent of the age of the patient, religious set, and duration of disease. The total gynecological cases seen within this study period were 923, of which 290 were selected, but only 283 fulfilled the inclusion criteria. The processed tissue and the slides stained with regular histochemical stain (Hematoxylin and eosin) technique in the 5-year study period were reviewed by the above researchers using a multi-headed microscope (®CARL ZEISS).

Results

Of the 283 myometrial lesions, 227 (80.21%) had a myomectomy, whereas 56 patients (19.79%) had hysterectomy operations. Two of these patients had just sub-total hysterectomy, 35 patients had a total hysterectomy, whereas the remaining 19 patients had a total hysterectomy with bilateral salpingo-oophorectomy. Patients who underwent hysterectomies and myomectomies were between the 3rd and 9th decades of life. The most clinically diagnosed lesion was uterine fibroids constituting 234 cases (82.68%) followed by adenomyosis in 17 patients (6.0%), whereas polyp was seen in nine patients (3.1%). Uterine prolapse and uterine rupture were seen only in 7 and 2 patients, constituting 2.47% and 0.70%, respectively. Other clinically diagnosed cases include abdominal pelvic tumors, high-grade squamous intraepithelial lesion, low-grade squamous intraepithelial lesion, incomplete abortion, uterine synaechia, and Meig's syndrome. Furthermore, the most common presenting symptom was menorrhagia. Most of these patients present with more than one symptom such as menorrhagia and abdominal mass while some were asymptomatic [Table 1].

Morphology of the uterus

Of the 56 uteri studied, a total of 33 cases (58.93%) were bulky, 13 cases (23.21%) were slightly enlarged, 6 cases (10.72%) were atrophic, while 4 cases (7.14%) were of normal size. The majority of these uteri had intra-mucosal, intramural, sub-serosal, and pedunculated well-encapsulated nodular masses with a grayish-white whorled appearance on cut sections ranging from 2 to 26 masses. Twelve (12) cases with ill-defined mass were seen, whereas 4 cases constituting 7.14% were unremarkable on cut sections.

Histopathology

Histologically, nonneoplastic lesions were two cases of hemorrhagic necrosis and 9 cases of adenomyosis altogether constituting 3.89%. Malignant lesions were seen only in 6 cases constituting 2.12%: Five cases of leiomyosarcoma and one case of invasive carcinosarcoma. However, benign neoplastic lesions constituted 272 cases (96.11%). Out of 272 neoplastic lesions, 255 cases (90.1%) had only leiomyoma while 11 cases had leiomyoma with associated adenomyosis constituting 3.89% [Table 2]. Therefore, the total number of leiomyoma was 266 with a frequent of 93.9%.

Table 1: Symptoms and their frequencies

Symptoms	Frequencies, *n* (%)
Menorrhagia	82 (31.41)
Lower abdominal mass	70 (26.81)
Abdominopelvic pains	28 (10.72)
Irregular vaginal bleeding	26 (9.96)
Infertility	10 (3.58)
Post-coital bleeding	8 (3.06)
Dysmenorrhoea	5 (1.92)
Purulent vaginal discharge	5 (1.92)
Dysuria	2 (0.77)
Prolonged labour	2 (0.77)
Weight loss	5 (1.92)
Combined symptoms	18 (6.89)
Total	261 (100)

Non-neoplastic lesion

Adenomyosis was found between the age group of 20 and 70 years with majority of the cases occurring at the 5th decade of life and constituted 40% (8 cases) out of the total of 20 cases seen. However, one case each was seen in the 3rd and 7th decade of life [Figure 1].

The most common clinical symptoms of adenomyosis in this study was menorrhagia seen in 4 (44.4%) out of 9 cases, whereas 3 cases had intermenstrual bleeding and the remaining 2 presented with infertility and dysmenorrhea.

Grossly, most of the uterus with adenomyosis were slightly enlarged while those associated with leiomyoma were bulky in size.

The most common associated pathology found was adenomyosis coexisting with leiomyoma in 11 cases and accounted for 3.9%.

Hemorrhagic necrosis was seen in two patients ages 20 and 38 with a presenting history of prolonged labors at 40 and 39 weeks of gestation, respectively. Both had longitudinal lateral segment rupture measuring 12.5 cm × 10.0 cm × 3.5 cm and 15.5 cm × 14.5 cm × 5.5 cm, respectively.

Neoplastic lesions of the myometrium

The neoplastic lesions constituted 272 cases (96.11%) of the total specimens studied. Of the 272 neoplastic lesions, 266 cases (94.0%) were benign tumors of which all were leiomyomas while 6 cases were malignant neoplasm; 5 leiomyosarcoma and 1 case of invasive carcinosarcoma.

Table 2: Number of cases and percentage frequencies of myometrial lesions

Valid	Number of cases, frequency (%)
Adenomyosis and leiomyomata	11 (3.9)
Adenomyosis	9 (2.8)
Haemorrhagic necrosis	2 (0.7)
leiomyoma	255 (90.1)
leiomyosarcoma	5 (1.7)
Invasive carcinosarcoma	1 (0.4)
Total	283 (100.0)

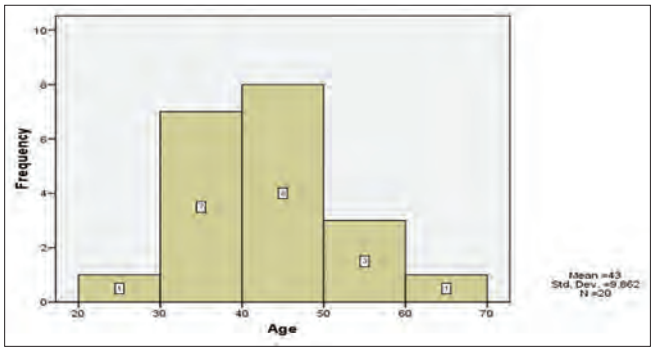

Figure 1: Histogram showing the frequency of adenomyosis versus age group

Leiomyoma

Leiomyomas were seen between the age group of 20 and 80 years. The highest percentage of occurrence (125 cases) was observed between the age group of 31 and 40 years constituting 49.02%, followed by 85 cases (33.33%) in the 5th decade [Figure 2].

Menorrhagia was the most common symptom followed by abdominal mass and abdominal pain while some have combined symptoms.

Grossly, these lesions were well-encapsulated nodular firm tissue with a whorled appearance on cut sections. Out of 266 cases of leiomyomas, only 82 cases occurred singly and accounted for 30.83% while the majority were multiple nodules constituting 69.17% (184 cases).

Histologically 260 cases were typical leiomyomas characterized by interlacing bundles of smooth muscle cells disposed in whorls and fascicles. Degenerative changes were seen in 139 cases out of 266. Hyaline degeneration was found to be the most common degenerative changes constituting 52% (72 cases) followed by cystic degeneration in 18% (25 cases) and myxoid degeneration in 12% (16 cases) while calcification occurred in 10 cases (8.0%) [Figure 3a]. Eleven cases out of 266 show benign glands within the muscle bundle more than 2.5 cm from the endometrial surface (adenomyosis). Moreover, six cases of leiomyoma show bizarre cells but lack atypical mitotic figures or areas of necrosis and were therefore diagnosed as symplastic variant of leiomyoma [Figure 3b].

Leiomyosarcoma

Leiomyosarcoma constitutes 5 cases (1.77%) in the present study and occurred between the ages of 45 and 70 years. The highest percentage of occurrence was within the 5th decade of life.

The index cases presented with variable symptoms ranging from intra-abdominal mass, weight loss, constipation, easy satiety, and bleeding per vagina. It is diagnosed histologically by present of atypical spindle cells having eosinophilic cytoplasm and pleomorphic hyperchromatic cigar-shaped nuclei with numerous abnormal mitotic figures and extensive

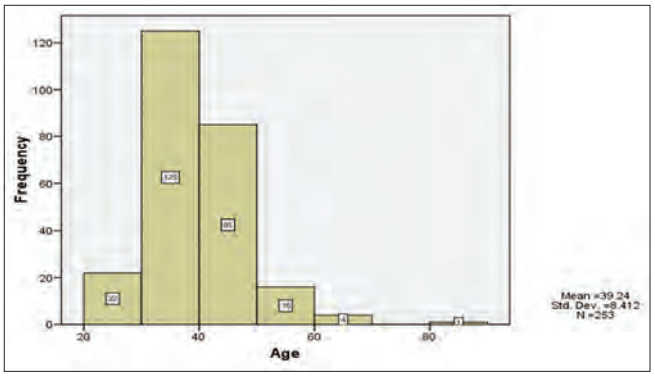

Figure 2: Histogram showing different age groups harbouring uterine fibroid with the peak age being between 30 and 40 years

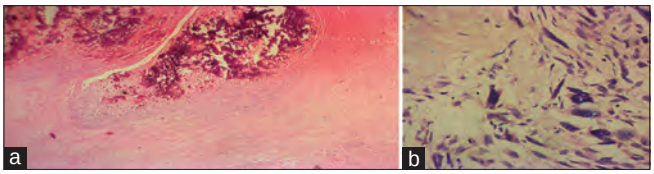

Figure 3: (a) Photomicrograph of degenerate leiomyoma showing areas of myxoid, hyaline and calcification (arrow) changes. (b) Photomicrograph of symplastic leiomyoma showing ×40 Objectives of bizarre cells (double arrow head) with focal area of hyaline change (single arrow head) but lack area of necrosis and abnormal mitotic figures

areas of coagulative necrosis [Figure 4]. All the cases were high-grade lesions.

Invasive carcinosarcoma

One case of invasive carcinosarcoma representing 0.35% of all malignant lesions.

Discussion

The diseases of myometrium are well-studied in different parts of the world, especially among the Caucasians. However, there are no data at NAUTH Nnewi. The only data were on clinical presentations of uterine fibroid. This present study is therefore aimed at providing histologic data on myometrium lesions. Adenomyosis was found in nine cases (3.53%) with an additional 11 cases coexisting with leiomyoma constituting 20 cases altogether (7.07%). This index result is comparable with the studies by Molitor (8.80%) and Baishya and Hazarika (8.98%) of the tertiary care hospital India in all the cases they studied.[7,9] However, our finding differs from Daru *et al*. of tertiary hospital North-Central Nigeria who reported 34.9% in 5 years study period and Kilkku *et al*. who also reported adenomyosis in 13.20% of all cases studied.[10,11] In the present study, the highest no of cases of adenomyosis was seen between the ages of 41 and 50 years (5th decade of life) with a frequency of 40% (8 cases) followed by the age group 31–40 years with a frequency of 35% (7 cases). This is similar to the reports by Struble and Bedaiwy, Vercellini *et al*., and other researchers where most cases of adenomyosis were found in women between 40 and 50 years of age.[12,13] In contrast, Baishya and Hazarika (64.51%), Azziz (70.80%), and Molitor (76.20%) reported the highest number of cases between the ages of 31 and 40 years (4th decade of life).[7,9,14] Struble and Bedaiwy further stated that this age range (41–50 years) may be due to the common performance of hysterectomies in this age group as well as prolonged lifetime exposure to hormones.[12] Menorrhagia was found to be the most common presenting symptom (44.4%) in this index study which is similar to the reports from most other literature. Furthermore, adenomyosis has been linked with many associations such as endometriosis and leiomyoma in most literature. The most common associated pathology found in the index study was with leiomyoma accounting for 11 cases (55%), out of 20 cases of adenomyosis seen which is similar to report by Mc Causland which also accounted for 55.00%.[15] The association of leiomyoma and adenomyosis also correlated well with other studies done by Baishya and Hazarika (32.25%) and Molitor (38.40%).[7,9]

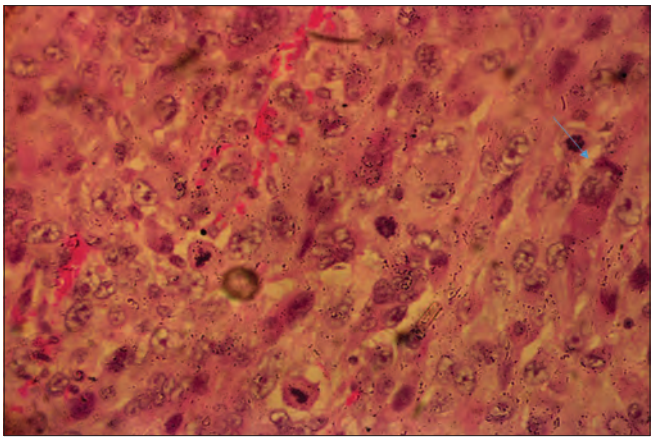

Figure 4: Photomicrograph of high grade leiomyosarcoma showing × 40 Objectives of atypical spindle cells with eosinophilic cytoplasm and pleomorphic hyperchromatic cigar-shaped nuclei displaying numerous abnormal mitotic figures (Ring-Shape = Arrow)

Leiomyoma was found to be the only benign myometrial neoplasm and constituted 266 cases out of 283 myometrial lesions accounting for 94.1% of the total lesions of myometrium in the present study and 29.1% of all gynecologic lesions. This is similar to work done by Baishya and Hazarika of the department of pathology, tertiary care hospital, India who reported 70 cases of leiomyoma out of 104 cases (67.3%) of myometrial lesion seen and 21.15% of 345 specimens studied.[7] The previous work done in NAUTH by Ezeama *et al*. from 2002 to 2006 reported 10.7% in 117 of the 1094 gynecological admissions during the study period.[16] The percentage of leiomyoma in 5 years study period of all the gynecological cases as reported in Amino Kano Teaching hospital and Federal Teaching Hospital Abakaliki were 24.7% and 30.1% by Omole-Ohonsi and Belga and Ndubuka, *et al*. respectively which correspond with the index NAUTH report.[17,18]

In the index study, leiomyoma was found more between the age group of 21 and 60 years with only one case seen at 80 years. The highest number of cases was between the ages of 31 and 40 years (44.17%), and the least cases were seen in the 7th and 9th decades of life. This is similar to numerous works done by other researchers who reported the same age range of 31–40 years as well as a previous clinical study done in this institution by Ezeama *et al*. who found majority of cases in the age group of 30–44 years (75.60%) with the least presentation in ages 50–54 years.[16] In addition, the most common presenting symptoms found in this study was menorrhagia (30.45%) followed by abdominal mass (28.19) while abdominal pain and vaginal bleeding rank 3rd and 4th with frequencies of 14.66% and 8.65%, respectively. This is in tandem with the work done by Baishya and Hazarika of the department of Pathology, Assam, India who reported menorrhagia as the most common symptom constituting 41.42%, followed by dysmenorrhea 12.85%, and pain abdomen 8.57%.[7]

Leiomyosarcoma constituted 1.77% while invasive carcinosarcoma constituted 0.35% resulting in 2.12% of all index myometrial lesions. Baishya and Hazarika reported no primary malignant tumor of the myometrium, and only 3 cases of secondary malignant tumors invading into the myometrium while various studies in the literature reported a very low incidence of leiomyosarcoma.[7] Parker *et al*. and Waldmann *et al*. reported leiomyosarcoma of 0.075% and <1.0% in their studies, respectively.[19,20]

Conclusion

The majority of myometrial lesions are benign neoplasia (leiomyoma) with adenomyosis as the commonest associated pathology. Whereas, the most common symptoms presented by the patients were menorrhagia and lower abdominal mass. The index study has in addition highlighted the importance of histology examination as the only diagnostic tool in differentiating myometrial cases which have similar clinical symptoms or presentations.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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