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The Incidence of Uterine Leiomyoma and Leiomyosarcoma at Tripoli Medical Center, Libya

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ABSTRACT

Uterine fibroids are common benign smooth muscle tumor arise from muscular part of the uterus and considered one of the major causes of abnormal uterine bleeding in women of reproductive age group and the main reason still not known exactly. On the other hand, the leiomyosarcoma which is rapidly growing are malignant tumor arise in post-menopausal women and often detected as an incidental finding in hysterectomy specimens.

In this study, the incidence of uterine smooth muscle tumors (leiomyosarcoma and leiomyoma) in the Libyan woman and their distribution among the different age groups (from 11 to 80 years old), their type, location and the way of therapy was investigated. The study was conducted at Diagnostic Histopathology Laboratory at the Tripoli Medical Center Hospital (TMC) involving 1952 cases covering the period of twelve years from January 2002 to December 2013.

The obtained results indicated that the leiomyoma cases were much higher than leiomyosarcoma cases which represent 99.28% compared to 0.71%. Moreover, the prevalence of leiomyoma cases reached the top value on the year 2008 with 24.6%. Additionally, sharp increase in the incidence of leiomyoma cases was observed in the age group between 30 to 50 years with more than 40%. Similarly, the highest number of leiomyosarcomas cases was detected in the median ages of women (from 30 to 50's) compared to the other age groups. The obtained differences in the incidence trend of the analyzed cases and their different age and year distribution are highly expected to reveal possible differences in their risk factors. Accordingly, additional investigations for the reasons behind such differences are required and recommended. This large variation in the incidence of occurrence of both types of uterine tumors and their sharp increase at a particular age group is not fully clear, however further investigation will be carried out based on this survey.

Keywords- *Uterine fibroid; Leiomyoma; Leiomyosarcoma; Survey; Myomectomy; Menorrhagia.*

INTRODUCTION

The terms uterine fibroids, myoma or leiomyoma are synonymous and are the most common benign tumors of the female reproductive tract with high prevalence value up to 70%. The peak incidences occur among women in the age of 40s and 50s.[1,2] The leiomyoma present as a mass with abnormal bleeding, in addition, it can often be multiple of different size and present in myometrium, subserosa, or submucosa. The main reason of such tumors is not clear yet however; vast variety of reasons and risk factors have been noticed and reported.[1,3] Some hypothesis contribute this to genetic, diet or environmental factors. Other assumption indicated that hormones are the strongest factor; as it can be explained by the absence of leiomyoma in the teenage compared to the menopausal age. Moreover, many studies have shown that estrogen hormone is considered as the major promoter of fibroid growth; however, other hormones like progesterone can play a role by producing a high level of (TGF-β).[4] Different treatment options exist ranging from simple monitoring or conservative therapy where the fibroids have no obvious symptoms to medical and surgical therapy. Medical management is only used for short-term therapy whereas, surgical treatment include removal of fibroid from the wall of the uterus (myomectomy) or removal of a woman uterus (hysterectomy).[5] Leiomyosarcoma on the other hand is malignant change in a leiomyoma or uterine fibroid, it basically originate from smooth muscle of the uterus. It considers infrequent and rare tumor compared to leiomyoma that accounts for 2% to 5% of all uterine malignancies.[3-6] Leiomyosarcoma is more prevalent in relatively young patients aged 40–55 and carcinosarcoma appears at more advanced ages. Interestingly, many case reports have showed that the majority of incidences are in the age above 37 years.[3] Moreover, an epidemiological

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study by Yael Naaman *et al.* in 2011 has showed that sarcomas were more prevalent in women of Ashkenazi origin (50–70%) than in those of Sephardic descent (20–25%).[2] Similar results and foundation was reported by Schwartz *et al.* in 1985.[7] However, a previous study by Arrastia *et al.* in 1997 indicated that African-American origin is known to be a risk factor for sarcoma of different ages.[8] In our study the age distribution for the study cases will be investigated, compared and discussed later in the discussion part. The treatment of such cases are usually includes one of the following surgery, adjuvant radiotherapy or chemotherapy.[2,3]The aim of the present study is screening and assessment of the incidence of fibroid tumors and sarcoma in the Libyan woman. The survey was conducted at Diagnostic Histopathology Laboratory at the Tripoli Medical Center Hospital (TMC). 1952 cases were analyzed covering the period from January 2002 to December 2013. The study was directed toward issues of prime importance; to identify the different percentage of leiomyoma and leiomyosarcomas, type and location of uterine fibroid tumor, patient's age and way of therapy.

MATERIALS AND METHODS

Fibroid tumors specimen (myomectomy and hysterectomy) which analysed in this study were processed and diagnosed in the Diagnostic Histopathology Laboratory at Tripoli Medical Center Hospital (TMC) in Tripoli, Libya. Gross examination and sections the specimen into thin slices had been done in a hood. 10% of formalin (Neutral Buffered Formalin) was used as a fixative for all specimens.

Tissue Processing Machine was used to dehydrate the tissue by using ethanol alcohols. The processed tissue then embedded and blocked by using a hot paraplast (Bio-optica), then the tissue blocks cut in a thin section (from 1.5 to 3 µm) using a microtome machine (leica). Thin sections stained using Hematoxylin and Eosin (Bio-optica) and examined under the microscope.

Records data for the total 1952 cases that confirmed uterine fibroid tumors were analysed in this study to identify the different percentage of leiomyoma and leiomyosarcomas. Histological reports, type of uterine fibroid tumor, patient's age, location of fibroid tumors in a uterine and the type of therapy were analysed in this study.

RESULTS

In this study we analyzed two fibroid tumors (leiomyoma and leiomyosarcoma) to determine the incidence of leiomyoma and leiomyosarcoma in patient's age. 1952 cases of fibroid tumors were collected from the Diagnostic Histopathology Laboratory at TMC in Libya and screened during the period time 2002 to 2013. Data shows that the level cases of leiomyoma are greater than leiomyosarcoma during the twelve years of screening. Out of 1952 fibroid tumore cases 1938 were leiomyoma and 14 cases were leiomyosarcoma which represent 99.28% and 0.71 % respectively (Figure1).

Additionally, the incidences increased steadily until reach the top value on 2008 and then start to decline. The highest number of leiomyoma cases (Figure 2) was in the year 2008 and 2009 with (245 cases and 232 cases respectively) which represent 24.61%, whereas the lowest cases was in 2011 and 2013 with (97 cases and 84 cases respectively) which represents 9.33%. The distribution of the leiomyoma cases during the analyzed years were as following: about 106 cases (5.46%) in the year 2002, 131 cases (6.75%) in 2003, 154 cases (7.94%) in 2004, 204 cases (10.52%) in 2005, 160 cases (8.25%) in 2006, 217 cases (11.19%) in 2007, 245 cases (12.65%) in 2008, 232 cases (11.97%) in 2009, 158 cases (8.15%) in 2010, 97 cases (5.0%) in 2011, 149 cases (7.68%) in 2012 and 84 cases (4.33%) in 2013 (Figure 2).

As the data indicated, the incidence of leiomyoma increased steady until it reach the top value of cases on 2008 and then start to decline. Moreover, the distribution of the leiomyoma cases with patient ages between 11 to 81 years old were studied (Figure 3). Only 3 cases (0.15%) of leiomyoma was diagnosed in the age 11 to 20, whereas 177 cases (9.13%) in the age 21 to 30, 820 cases (42.31%) in the age 31 to 40, 757 cases (39.06%) in the age 41 to 50 and 146 cases (7.53%) in the age of 51 to 60 years old. In an older age from 61 to 70 about 25 cases (1.28%) were diagnosed, 8 cases (0.41%) in the age 71 to 80 and only 2 cases (0.1%) in the age 81 year and over (Figure 3). The obtained data indicated that most cases of leiomyoma were diagnosed in the median age from 31 to 50, whereas leiomyoma are rare under age 20 and over 71. Thus, leiomyomas cases showed sharp increase in women between 30-50 years old.

DISCUSSION

When fibroid tumors detected in uterus, the most frequent operative technique used to treat this disorder is hysterectomy or myomectomy. Hysterectomy is a surgical removal of the entire uterus and myomectomy is a surgical procedure in which individual fibroids are removed as discussed previously. In this study we found that the majority of patients had myomectomy to treat fibroid tumore, 1894 patients had myomectomy and 44 patients had hysterectomy which represent 97.72% and 2.27% respectively.

Additionally, location of fibroid tumors in uterus classifies leiomyomas in different types (Intramural leiomyomas, Submucous leiomyomas and Subserouse leiomyoma). Intramural leiomyomas located within the uterine wall, Submucous leiomyomas develop from myometrial cells just below the endometrium or located under the uterine mucosa, whereas Subserouse leiomyoma are located just under the uterine serosa or develop on the outer surface of the uterus and continue to grow outwards giving the uterus a knobby appearance. Most leiomyomas span more than one anatomic location and therefore, a multiple leiomyoma are diagnosed for fibroid tumors. This study shows that the most cases of leiomyoma were multiple leiomyoma (244 cases) and the second highest leiomyoma

were intramural leiomyomas (142 cases), whereas 64 cases were submucous leiomyomas and 28 cases were subserouse leiomyoma (Table 1).

Table 1: Number of leiomyoma cases with their locations.

Leiomyoma variants	Number of cases
multiple	244
intramural	142
submucous	64
subserouse	28

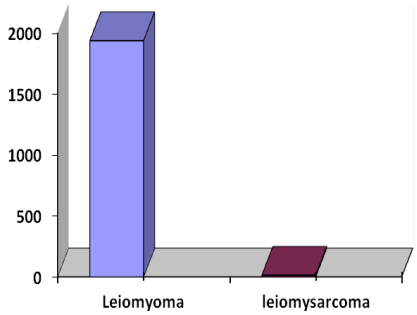

Figure 1: Represent the total number of leiomyoma and leiomyosarcoma cases.

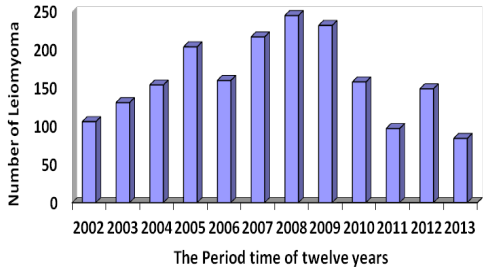

Figure 2: Represent the number of leiomyoma cases during the analysed years (2002-2013).

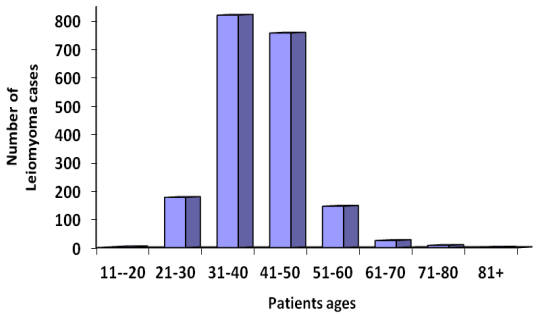

Figure 3: Represent the distribution of patient age and number of leiomyoma cases.

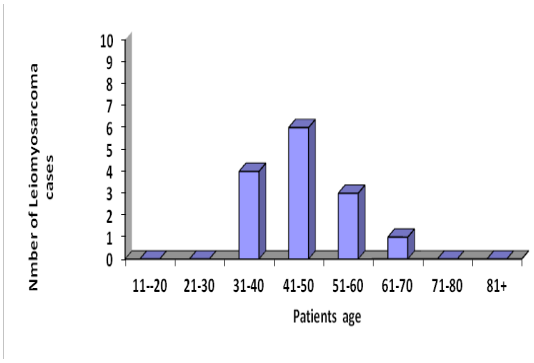

Figure 4: Distribution of the leiomyosarcomas cases in relation to patient age.

Upon screening the different variants of leiomyoma the distributed cases were diagnosed as following:- Cellular leiomyoma 58 cases, Red degeneration 19 cases, Bizarre 13 cases, Miotically active leiomyoma 12 cases, Hydropic degeneration 2 cases, Angioleiomyoma 2 cases, Leiomyolipoma 2 cases and Myxoid 1 case. The rest 1350 cases were diagnosed as leiomyoma and were not identified with one of the specific variants. In this study, leiomyosarcoma was also evaluated, as it mention earlier, leiomyosarcoma is a malignant smooth muscle tumor of the uterus. Transformation of leiomyomas to leiomyosarcomas is extremely rare. Many researchers showed that leiomyosarcomas are found in approximately 0.1% of women with leiomyomas.[9] In this study we found that out of 1952 fibroid tumore cases, 1938 cases were leiomyoma and 14 cases were leiomyosarcoma during the twelve years from 2002 to 2013. This large variation represents a high percentage reached to 99.28% and 0.71% for leiomyoma and leiomyosarcoma respectively. As we mentioned and discussed before, most cases of leiomyoma were detected in the median age of women (from their 31's to 50's). Similarly, leiomyosarcomas data also shows that the most cases of leiomyosarcomas were detected in the median ages of women (from their 31's to 50's) (Figure 4). Out of 14 cases of leiomyosarcomas 4 cases were detected in women in their age from 31's to 40's, 6 cases were detected in their age from 41's to 50's, 3 cases were detected in their age 51's to 60's and only one case were detected in their age 61's to 70's (Figure 4).

The above figure showed that the most cases of leiomyosarcomas are detected in women in their age 30's to 50's, 4 cases detected in age 31's to 40's, 6 cases detected in age 41's to 50's, 3 cases detected in age 61's to 70's and no cases detected in age 11's to 30's and in age 71's to over.

As the results indicated, the incidence of uterine smooth muscle tumors leiomyoma cases were much higher than leiomyosarcoma cases in the Libyan woman and the occurrence of leiomyoma cases reached the top value on the year 2008 with 24.6% compared to the other study period. Additionally, sharp increase in the incidence of leiomyoma cases was observed in the age group between 30 to 50 years with more than 40% compared to the other age groups. The same trend was observed for leiomyosarcomas cases, where most of the cases detected were in the median ages of women (from 30 to 50's). This large variation in the analyzed cases and their different age and year distribution are not fully known and most likely related to the possible differences in their risk factors. Consequently, supplementary exploration for the potential reasons behind such differences are required and recommended.

CONCLUSION

1952 cases of fibroid tumor were analysis and the cases were reported as leiomyoma with 99.28% compared to leiomyosarcoma during the study period of twelve years. The highest percentage of leiomyoma cases was observed during the year of 2008. Interestingly, the age group between 30-50 showed the highest profile of all examined cases.

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