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The validity of transvaginal ultrasound in diagnosing uterine Leiomyoma in comparison to Histopathology

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ABSTRACT

One hundred women with a uterine leiomyoma were subjected to transvaginal ultrasonography. Ninety-one of the patients were married and the remaining 9 were single. Five of those married women had a complicated pregnancy, while 35 were infertile and the remaining 51 were multiparas of the lower mean number of pregnancies. All patients underwent operations and their histopathological results were compared with sonographic morphology. The result of this study showed that the most common type was sub endometrial leiomyoma with (45 %), sub serious leiomyoma (30%) and intramural leiomyoma (23%). The highest percentage of ultrasonic appearance was hypoechoic (63%) whileheterogeneous or echogenic ultrasonic appearance was seen to be related to a complicated fibroid. The most common site of leiomyoma was in the body of the uterus.

Keywords: histopathology, fibroids, leiomyoma, ultrasonography.

1. INTRODUCTION

Benign uterine leiomyomas (fibroids) are the most common pelvic neoplasm in women [1]. It presents a major public health problem affecting premenopausal women[2, 3]. It influences about(20 – 40%) of women in reproductive age[4, 5], which may be associated with considerable hospitalization and morbidity. According to the anatomical location it may be classified as subserosal, submucosal or intramural leiomyoma[6, 7]. Many patients are discovered incidentally during a clinical examination or imaging in asymptomatic women, but uterine fibroid may cause abnormal bleeding, pelvic pressure, bowel dysfunction, urinary frequency, urgency, urinary retention, low back pain, constipation or dyspareunia[8]. As a result, hysterectomy is a primary indication due to uterine fibroids and is most common in the UK and USA [9]. The diagnosis of leiomyomas since the 1970shas been based on ultrasonography, and since the 1980s when the transvaginal scan was introduced, and became a gold standard. Nowadays ultrasonography is the first – line imaging modality in the detection and evaluation of uterine leiomyoma [10]. Analysis of tissue microscopic features is very important to qualify and quantify histopathological parameters which enable in the differential diagnosis of the neoplasm[7]. Thus, the current study aims to evaluate the ultrasonography of leiomyomas in comparison with histopathological findings after hysterectomy.

2. MATERIAL AND METHODS

One hundred women were included in a comparative study between ultrasound and histopathology of leiomyomas for a period of one-year. They aged between 24 – 60 years with a mean of 40 years. All were attended Al- Khansaa teaching hospital for maternity and children with clinical manifestations of vaginal bleeding as menorrhagia, metrorrhagia, abdominal pain, backache, sometimes with urinary symptoms and uterine prolapse. They underwent a pelvic examination by a gynecologist and then referred to the sonographic screening.

Transvaginal ultrasonography was performed with an empty bladder by using a Korean Samsung Medison Hs 40 machine with a real-time6.5Mhzultrasound prob. Then, examination of the mass was done to measure its size by three dimensions, detailed study for its echogenic pattern and special observation for adjacent structures. A follow up of patients were done and repeating scan within a four weeks period for evaluating the lesion whether regressed or increased in size.

Histopathology of the mass from all patients was done after surgical exploration and comparison study with ultrasound findings included the actual size, site, and a number of fibroids and any complications if present.

3. RESULTS

Transvaginal ultrasonography was performed on all patientsexcept nine single and five pregnant who underwent trans abdominal examination. Repeating the scan after four weeks showed that five of the married patients were pregnant and three of those had placenta previa which ended by a cesarean section.The4th one ended with pre-term labor while the last one aborted the fetus.Among the hundred patients examined, thirty-five (35%) women were infertile, fifty-one (51%) women were multiparas with a lower mean number of pregnancies (Table 1). All patients underwent a hysterectomy or myomectomy. A histopathological and ultrasound findings showed fifty-five (55%) and thirty-two patients (32%) with a single and multiple uterinefibroids,respectively.However, only ten patients (10%) had a single fibroid by ultrasound but histopathology showed multiple fibroids. Moreover, three patients (3%) had a negative ultrasound results while histopathological results revealed an intramural fibroid (Table 2). Ultrasound pattern for uterine leiomyoma showed a hypoechoic masses in 63 patients (63%), echogenic or with an echogenic rim in 25 patients (25%), while the remaining 9 patients (9%) appeared to be of mixed echogenicity (Table 3).Another parameter in this study was the fibroid distribution and revealed a ninety-eight patients (98%) with leiomyoma in the body of the uterus , 1 patient (1%) had cervical fibroid and the other one (1%) found to have a fibroid in the broad ligament.On the other hand, 45 patients (45%) found to have a sub endometrial fibroid (Fig, 1), 30 patients (30%) showedsubserous fibroid (Fig 2) and the remaining 23 patients (23%) had an intramural fibroid (Fig 3) (Table 4). Among the hundred patients studied, 82%, 18%, were in the premenopausal and postmenopausal periods, respectively (Table 5). During the four weeks follow up, only one patient(1%) showed an increase in the size of the fibroid which confirmed by a histopathology to be malignant,while 5 patients (5%) showed calcification of the mass. Ultrasound results showed a 97% accuracy in comparison to histopathology.

Table 1: Leiomyomas with parity

Patient class		No. of patients
Single		9
Married	Pregnant	5
	Infertile	35
	Lower mean pregnancy	51
Total		**100**

Table 2: Comparison of ultrasound and Histopathology according to the number of fibroids

No of patients	Ultrasound	Histopathology
55	Single fibroid	Single fibroid
32	Multiple fibroids	Multiple fibroids
10	Single fibroids	Multiple fibroids
3	Negative	Positive
100		

Table 3: Echo pattern of uterine fibroid

Echo pattern of fibroids	Occurrence %
Hypoechoic	63
Echogenic and/or echogenic rim	25
Heterogeneous echo pattern	9

Table 4: Demonstrate the site of uterine fibroid and its occurrence

Site	Type	Occurrence %
Body	-sub endometrial	45
	-sub serous	30
	-Intramural	23
Cervix	Cervical	1
Broad ligament	Broad ligament	1
Total		**100**

Table 5: Demonstrate the occurrence of fibroid according to age group.

Age group	Occurrence %
Pre menopause	82
Postmenopause	18
Total	**100**

Fig. 1: Subendometrial uterine fibroid

Fig. 2: Subserous uterine fibroid

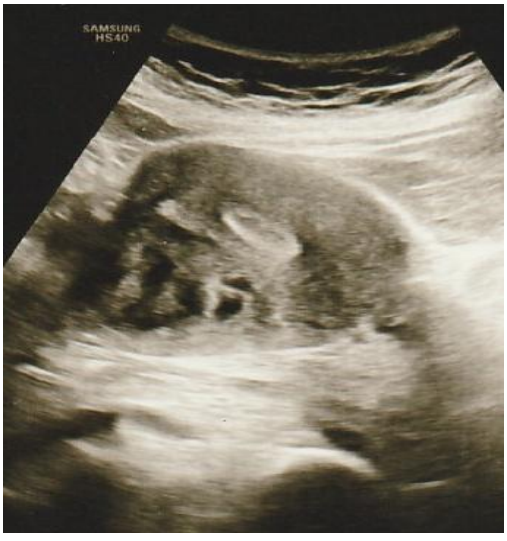

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Fig. 3: Intramural fibroid.

4. DISCUSSION

This study showed that pregnant patients who had fibroids were exposed to a high incidence of complications throughout antepartum, intrapartum, and postpartum periods. This suggests that they should be carefully screened in the antenatal period through regular follow-up. Most of the fibroids were asymptomatic but may adversely affect the path of pregnancy and labor depending on their locations and size. The broad employment of ultrasonography had simplified the diagnosis and management of fibroids in pregnancy [11]. Our findings agreed with Klatsky et al. (2008) who reported that a rate of cesarean section ranged between 34% and 73% in women with fibroids and were 3- 7 folds increased the risk of cesarean delivery [12]. With respect to echogenicity, the hypoechoic pattern of the fibroid nodules was the most common appearance with a (63%) which were lower than what Ofori EK et al. (2012) had founded (85.3%). The hypoechoic pattern is due to the early onset of the fibroid which leads to less calcification in the nodules[13].Also, our findings indicated that 45% of the fibroids were in the subendometrium and the corpus was the most common site of the location, while subserosal fibroids were the second highest frequency (30%) which lied beneath the serosa and tended to distort the outer contour of the uterus. Theseresults were found to be opposite to the findings of Benjamin DaboSarkodieet al,(2016)[2] which showed that 57.8% of the fibroids were intramural with only 4.4% been submucosal. Also, they reported that the corpus was the commonest site for the fibroids locations. This could be due to a lack of family medicine program in our region and therefore, submucosal fibroid was found to be the greatest cause of irregular bleeding due to their closeness to the endometrium[2] and caused high morbidity to the patients. The fibroid was found to be more common in a pre-menopausal period and made (82%), while after menopause found to be (18%) of the patients. Similar results were obtained by Benjamin DaboSarkodie et al, (2016)[2]. Hormonal changes could be accounted for those findings in the above studies. Transvaginal ultrasound accuracy was found to be 97% with respect to Histopathology. Maria Syl D et al, (2017) reported a sensitivity of 90-99% of detecting uterine fibroid when using a transvaginal ultrasound. This variation could be due to missing subserosal or small fibroids[8].

CONCLUSION

In comparison to histopathology in al Khansaa maternity hospital,it is concluded that transvaginal ultrasonography showed a 97% accuracy in detecting and evaluating uterineleiomyoma according to its location, number, and its content. Also, Sub endometrial type of leiomyoma appears to be the highestpercentage followed by intramural leiomyoma, while the lowest percentagewas the subserousleiomyoma.

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