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A RETROSPECTIVE STUDY ON THE VOLUME OF ENDOMETRIAL FLUID COLLECTION IN PREDICTING THE ENDOMETRIAL PATHOLOGY

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Abstract:
Objective: *The aim of this study was to find out the effectiveness of ultra-sonographic examination of volume of EFC (Endometrial Fluid Collection) for the prediction of endometrial pathology in the asymptomatic post-menopausal females.*
Methodology: *In this study, we analyzed 150 asymptomatic post-menopausal females retrospectively from March 2016 to March 2020. All the patients present with endometrialneoplasia were members of Group-1, and we included the patients present with endometritis, insufficient tissue and endometrial atrophy in Group-2. We compared the patients of both groups with respect to primary (correlation among volume of EFC and endometrial thickness) as well as secondary outcomes (correlation between volume of Endometrial Fluid Collection and characteristics of demography).*
Results: *The findings of this showed that there was no association between volume of Endometrial Fluid Collection and endometrial thickness (P= 0.360). There was no relation between the volume of Endometrial Fluid Collection and characteristics of demography (P> 0.050). But the both volume of Endometrial Fluid Collection and thickness of endometrium were thicker in the patients of Group-1 as compared to the patients of Group-2 (4.80 ±1.90mm vs. 3.70 ±2.50mm; and 5.70 ±9.40mm vs. 2.70 ±2.50mm, respectively) (less than 0.05 was the P value).*
Conclusion: *There is no recommendation of the cutoff values for volume of Endometrial Fluid Collection and endometrial thickness on the basis of the results of this research work. It should be recorded that clinically significant malignancy rate is 2.0%. So, it is much vital to evaluate the endometrial sampling for the post-menopausal females present with Endometrial Fluid Collection.*
Keywords: *Endometrial Fluid Collection, thickness, ultrasonography, retrospectively.*

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INTRODUCTION:

Advancement in the field of imaging have permitted the ultrasonography to play an important role in timely detection of adnexal and uterine pathology. However, the findings of EFC (Endometrial Fluid Collection) in asymptomaticpost-menopausal females is matter of confusion for the gynecologists. EFC volume is an incidental outcome on ultrasonography with a prevalence rate of 4.0% to 14.0% [1]. There are suggestions that single-layer thickness of endometrium of four mm should be the last cutoff value, beyond this value sampling of endometrium is necessary regardless of the presence of EFC volume. The surroundings of endometrium as well as its thickness should be vital consideration than the availability of the fluid alone [2, 3]. Various research works have displayed that availability of the EFC volume may show cervical and endometrial pathology [4].

Some other research works have stated patients of endometrial carcinoma that appeared ultrasonographically with a thin layer of endometrium in the availability of Endometrial Fluid Collection volume [5]. There is no clear management of asymptomatic post-menopausal females present with volume of Endometrial Fluid Collection and utility of the routine sampling of endometrium has been debated in such patients because of the invasiveness and expense of such methods [6]. The objective of this research work was to find out the effectiveness of single layer ultra-sonographic examination of volume of Endometrial Fluid Collection for the prediction of endometrial pathology in the asymptomatic post-menopausal females [7].

METHODOLOGY:

There were 2455 asymptomatic post-menopausal females getting care from Services Hospital Lahore in the duration of this research work. Among them, 174 were present with transvaginal ultrasonography and all these females underwent endometrial sampling. Out of 174/154 patients were present with any past history of cervical excisional method, use of tamoxifen, use of hormonal replacement therapy or abnormal PAP test's cytology were the participants of this current research work. We retrospectively obtained the data of the patients from the clinical files of the patients from the record office of our institute. Ethical board of the institute gave the permission to conduct this research work. We defined the menopause as minimum twelve months of amenorrhea in female having more than 40 years of age. Thickest portion of endometrium as viewed in the sagittal plane of uterine was stated as the single layer endometrial thickness. Thickest anechoic region, also observed in the sagittal plane of uterine, was stated as the volume of Endometrial Fluid Collection.

The primary outcomes were the associations between the thickness of endometrium and volume of Endometrial Fluid Collection in the asymptomatic post-menopausal females. The secondaryoutcome were associated to the possible relation between the volume of Endometrial Fluid Collection and characteristics of demography. Parity number, age of the female, gravidity, duration of menopause, volume of Endometrial Fluid Collection, endometrial thickness, and sampling of endometrium underwent evaluation. We performed the endometrialsampling with the utilization of the Pipelle device and there was requirement of dilatation &curettage for 2 patients because of cervical stenosis. We included the patients suffering from endometrial hyperplasia/neoplasia in Group-1, and patients with endometrial atrophy, insufficienttissues orendometritis were separated in Group-2; we compared the patients of Group-1 and Group-2 with respect to both outcomes.

We used the SPSS V 21 for the statistical analyses of collected information. We used the Kolmogorov-Smirnov test for the evaluation of the normality of collected data. We expressed the normally distributed data in ranges, averages and standard deviationswhereas we expressed the non-parametric data in ranges, median and interquartile ranges. We utilized the Ttest and Mann-Whitney U test for the comparison of the non-parametricand parametric data, of the patients of both groups. We calculated the degrees of correlation between volume of Endometrial Fluid Collection and single layer endometrial thicknesses with the utilization of the Spearman's correlationco-efficient. We used the ROC (Receiver Operating Characteristic) curves for the determination of the association between both the volume of Endometrial Fluid Collection and thickness of endometrium for the patients of both groups. P value of 0.050 was the significant one.

RESULTS:

Characteristics of histopathology, ultrasonography and clinical findings for all the patients of groups present with EFC volume are present in Table-1.

Table-I: Demographic, Clinical and Histopathology Characteristics of All Women with Endometrial Fluid, Overall and According to Groups (Group-I and 2).

Characteristics	All patients (n=150, 100%)	Group-I (n=8, 5.3%)	Group-II (n=142, 94.7%)	P
Demographic				
Age (years), mean ± SD (range)	59.9±8.7 (43-83)	63±9.3 (50-77)	59±8.7 (43-83)	0.28
Gravidity, median (IQR) (range)	4 (2) (0-12)	3.5 (6.75) (0-9)	4 (2) (0-12)	0.58
Parity, median (IQR) (range)	3 (2) (0-10)	2.5 (5.25) (0-8)	3 (2) (0-10)	0.34
Duration of menopause (year),	9 (13) (1-40)	16 (19.5) (1-27)	9 (13) (1-40)	0.67
median (IQR) (range)				
Clinical				
Endometrial fluid (mm), mean ± SD (range)α	2.9±3.3 (1-29)	5.7±9.4 (1.5-29)	2.7±2.5 (1-20)	0.017
mean ± SD (range)α				
Single-layer endometrial thickness (mm),	3.7±1.4 (2-8)	4.8±1.9 (2 - 8)	3.7±1.3 (2 - 8)	0.01
Histopathological (n, %)				
Insufficient tissue	76 (50.7 %)			
Endometrial atrophy	63 (42 %)			
Endometrial polyp	5 (3.3 %)			
Endometritis	3 (2%)			
Endometroid Type Endometrial Cancer	2 (1.3%)			
Uterine Carcinosarcoma	1 (0.7%)			

Footnote: Patients with endometrial hyperplasia or neoplasia were included in Group-I, and those with insufficient tissue, endometrial atrophy, or endometritis were included in Group-II. α Endometrial fluid volume and single-layer endometrial thickness were measured as the thickest form viewed in the sagittal uterine plane.

Abbreviations: SD, standard deviation; IQR, interquartile range.

Final examination of the endometrial histopathology stated the malignant neoplasms in 3 patients present with EFC volume (2.0%). Only one patient who was present with the intraepithelialneoplasia of endometrium underwent hysterectomy, intra-operativefrozen-section examination and final pathologic analysis confirmed the presence of endometrial cancer. We also diagnosed two other patients with the uterine carcinoma and endometrial cancer. We found no association between the Endometrial Fluid Collection volume and single layer endometrial thickness with the utilization of the Spearman'scorrelation coefficient, P= 0.360.

There was no association of characteristics of demography with the presence of Endometrial Fluid Collection volume (P> 0.050). But, both the volume of EFC as well as singlelayer endometrial thickness were much greater in the patients of Group-1 as compared to the patients of Group-2 (4.80 ± 1.90 mm versus 3.70 ± 2.50 mm; and 5.70 ± 9.40 mm versus 2.70 ± 2.50 mm, correspondingly) (P< 0.050) (Table-1). There was no difference of ROC curve analysis between patients of both groups with respect to volume of Endometrial Fluid Collection (P= 0.090) or single layer thickness of endometrial (P=0.10) (Figure-1 and Figure-2).

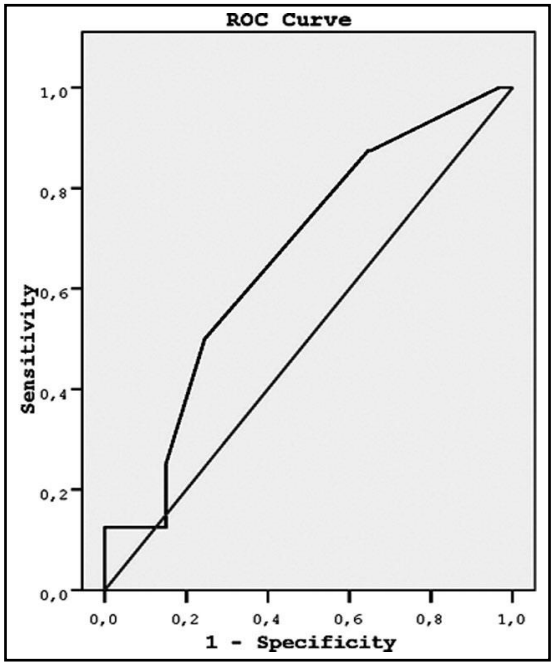

Fig. I

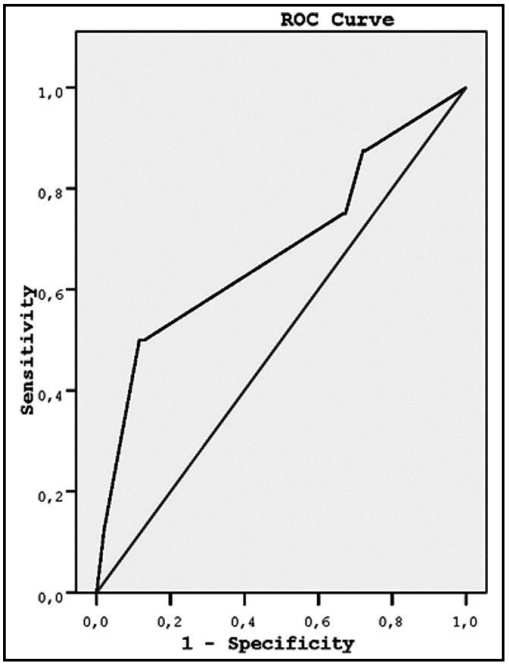

Fig.II

DISCUSSION:

There is variation in the reported rate of incidence of the Endometrial Fluid Collection on sonographic findings in the post-menopausal females from 4.0% to14.0% [8]. There are limiting research works on the Endometrial Fluid Collection volume in post-menopausal females and their results are also conflicting. Some of the investigators have stated the endometrialcancer with the volume of Endometrial Fluid Collection as an incidental finding in non-availability of the endometrial thickening [9-10]. Opposite to this view, Krissigave the recommendation of the endometrialsampling for the patients present with Endometrial Fluid Collection, regardless of the thickness of endometrium. They hypothesized that this particular fluid can mask the true nature of pathology with the exertion of pressure on the lining of endometrium [11]. One other research work asserted that criteria like the smoothness of endometrial lining and symmetry should be utilized to effect decisionsto examine histologically all the patients regardless of the thickness of endometrium [12].

The research works who studied the outcome of patients in context of Endometrial Fluid Collection, gave recommendation of thickening of endometrium as 3 or 4mm as cutoffvalue having requirement of further investigation [13]. There is also recommendation of obtaining 3-month sonogram follow up for the females present with inconspicuous much thin endometria [14]. Some authors have asserted that there may be association of Endometrial Fluid Collection with the malignancy even in the availability of endometria of less than 4 mm [15]. One other research work also recommended the endo-cervical sampling in non-symptomatic post-menopausal patients with volume of Endometrial Fluid Collection, even when the thickness of endometria is 3 mm or less; there is also recommendation of the sampling of endometria for the patients present with echogenic Endometrial Fluid Collection with any level of thickness of endometria [16]. Breckenridge reported the most striking finding regarding the association between Endometrial Fluid Collection volume and malignancy which stated that cervical or carcinoma was available in 16 out of total 17patients (94.0%) present with the Endometrial Fluid Collection [17].

In this current research work, Endometrial Fluid Collection volume and endometrial thickness were much high in the patients present with the hyperplastic and or neoplasticpathology, but it is not possible to show this correlation with the utilization of ROC curve analysis. Out of total one hundred and fifty patients, 2.0% (n: 3) patients were present with the malignancies of endometrium and uterine corpus. However, this specific association with the Endometrial Fluid Collection and endometrial cancer was not much high as presented in the previous research work as well as not low as described in some recent research works [18]. There are some limitations of this research work as this was a retrospective research work and this study carried out in a single center, there is need of further research randomized

research works with large size of samples to consolidate the findings of this research work.

CONCLUSION:

There is no recommendation of the cutoff values of volume of Endometrial Fluid Collection and endometrial thickness on the basis of the findings of this research work but it important to note that significant malignancy rate is two percent. So, post-menopausal females present with Endometrial Fluid Collection volume should be assessed for the endometrial sampling. There is need of further research works to assess the cost-effectiveness before the routine sampling of endometrium for recommendation.

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