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PREDICTION OF ENDOMETRIAL CANCER WITH THE VOULME OF ENDOMETRIAL FLUID COLLECTION

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Abstract:

Objective: *The aim of this research work is to calculate the volume of endometrial fluid collection through ultrasonography for the prediction of the endometrial cancer among asymptomatic post-menopausal females.*

Methodology: *In this research work, we analyzed 150 asymptomatic post-menopausal females retrospectively from April 2016 to March 2019. We included the patients with endometrial hyperplasia or neoplasia in Group-1, and patients with end metritis, insufficient tissue or endometrial atrophy in Group-2. We compared the patients of both groups with respect to primary and secondary outcomes. Primary outcomes were the correlations between thickness of endometrium and volume of endometrial fluid collection and secondary outcomes were the correlations between traits of demography and volume of endometrial fluid collection.*

Results: *We were unable to found any association volume of endometrial fluid collection and thickness of single-layer endometrium ($P = 0.360$). Likewise, there was no correlation of demographic traits with the endometrial fluid collection ($P > 0.050$). However, both the volume of endometrial fluid collection and single-layer thickness of endometrium were thicker in the patients of Group-1 in comparison with the patients of Group-2 (4.80 ± 1.90 mm vs 3.70 ± 2.50 mm; and 5.70 ± 9.40 mm vs 2.70 ± 2.50 mm, respectively) (P values < 0.050).*

Conclusion: *The findings of this work could not recommend the cutoff value for volume of endometrial fluid collection and endometrial thickness, this important to note that 2.0% is the clinically significant malignancy rate. Thus, It is important to assess the post-menopausal patients with endometrial fluid collection for the endometrial sampling.*

Keywords: *Menopause, Ultrasonography, Thickness, Endometrium, Demography, Endometrial Fluid Collection.*

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INTRODUCTION:

The advancement in imaging have permitted the ultrasound to perform a vital role in timely identification of pathology of adnexal and uterine. But the results of Endometrial Fluid Collection are asymptomatic. The females in post-menopausal condition create a confusing sign for specialists of this field. There is always an incidental finding of endometrial fluid collection during ultrasound with a rate of prevalence from 4.0% to 14.0%. There is suggestion that endometrial thickness of four millimeters should be cutoff value beyond which there should be performance of above endometrial sampling, irrespective to the availability of endometrial fluid collection and the adjacent endometrium as well as thickness of endometrium should be an of high important consideration as compared to the availability of the fluid.

Various research works have displayed that the availability of endometrial fluid collection can show the pathology of endometrium and cervical region. Some professionals reported have stated the patients of endometrial carcinoma that appeared through ultrasonography with very thin endometrium in presence of endometrial fluid collection. There is no clear management for the asymptomatic post-menopausal females present with endometrial fluid collection and there is debate on the routine sampling of endometrium in these patients because of high cost. This research work aimed to find out the effectiveness of the calculation of endometrial fluid collection through ultrasonography for the prediction of endometrial cancer in asymptomatic post-menopausal females.

METHODOLOGY:

Total 2455 asymptomatic post-menopausal females were receiving treatment at Mayo Hospital Lahore from April 2016 to March 2019. There were total 174 females who were present with endometrial fluid collection diagnosed during the transvaginal ultrasonography and all these female had to undergo endometrial sampling. Among these 174 females, 150 patients were present with no past history of the excisional procedure cervical region, usage of tamoxifen, use of the hormone replacement or abnormal cytology were the part of this research work. We obtained the data of the patients from the record files present in Hospital records. The ethical committee of the hospital gave the permission to conduct this research work. We defined the menopause as at least twelve months of amenorrhea in a female having more than forty year of age. We recorded the thickest endometrial region as observed in sagittal uterine plane as the single layer endometrial thickness. We recorded the thickest anechoic region also observed in sagittal uterine plane as volume of endometrial fluid collection. We used the 2D grey-scale Logiq 200.0 PRO ultrasound machine with a 7.50 MHz endo-vaginal probe by two experienced specialists.

We provided the comparison of primary and secondary outcomes. We evaluated the parity of females, age, gravidity, duration of menopause, volume of endometrial fluid collection, thickness of endometrium and endometrial sampling. We used the pipelle device for the endometrial sampling. There was requirement of dilatation and curettage for 2 patients because of cervical stenosis. We included the patients present with endometrial hyperplasia/neoplasia in Group-1, and patients present with not sufficient tissue, atrophy of endometrium or end metritis were the part of Group-2.

SPSS V.23 was in use for the statistical analyses analysis of the collected information. We used the Kolmogorov Smirnov test method to evaluate the data's normality. We used the averages and SD for the representation of categorical data. We used the ranges to represent the non-parametric information. We used the T-test for the representation of the comparison between parametric and non-parametric information. We used the ROC (Receiver Operating Characteristic) curves for the determination of the association between both volume of endometrial fluid collection and single layer endometrial thickness in the patients of both groups. P value of < 0.050 was significant.

RESULTS:

Traits of clinical, ultrasonography and histopathologic for all the patients present with endometrial fluid collection are present in Table-1 based on groups. Concluding endometrial histopathologic assessment displayed malignant neoplasms in 3 patients suffering from endometrial fluid collection (2.0%).

Table-I: Demographic, Clinical and Histopathologic Characteristics

Characteristics		All patients (N=150)		Group-I (N=8)		Group-II (N=142		P
		Mean / No	SD / Percent	Mean / No	SD / Percent	Mean / No	SD / Percent	
Demographic	Age (years), X ± SD	59.9	8.70	63.0	9.30	59.0	8.70	0.2800
	Gravidity, median (IQR)	4.0	2.00	3.5	6.75	4.0	2.00	0.5800
	Parity, median (IQR)	3.0	2.00	2.5	5.25	3.0	2.00	0.3400
	Duration of menopause (year), median (IQR)	9.0	13.00	16.0	19.50	9.0	13.00	0.6700
Clinical (X ± SD)	Endometrial fluid (mm)	2.9	3.30	5.7	9.40	2.7	2.50	0.0170
	Single-layer endometrial thickness (mm)	3.7	1.40	4.8	1.90	3.7	1.30	0.0100
Histopathological (n, %)	Insufficient tissue	76.0	50.70	-	-	-	-	-
	Endometrial atrophy	63.0	42.00	-	-	-	-	-
	Endometrial polyp	5.0	3.30	-	-	-	-	-
	Endo metritis	3.0	2.00	-	-	-	-	-
	Endo Metroid Type Endometrial Cancer	2.0	1.30	-	-	-	-	-
	Uterine Carcino-sarcoma	1.0	0.70	-	-	-	-	-

Only one patient who was suffering from endometrial intraepithelial neoplasia had to undergo hysterectomy; the analysis of intra-operative frozen section as well as concluding examination established the detection of endometrial cancer of endo metroid type. We also diagnosed 2 other patients with the endometrial cancer of endo metroid type and uterine carcinoma correspondingly. We were unable to find any correlation between endometrial fluid collection and endometrial thickness of single layer (P = 0.360). Likewise, there was also no relation of demographic traits with the endometrial fluid collection (P values > 0.050).

However, we found the larger values of volume of endometrial fluid collection and endometrial thickness in the patients of Group-1 in comparison to the patients of Group-2 (4.80 ± 1.90 mm vs 3.70 ± 2.50 mm; and 5.70 ± 9.40 mm vs 2.70 ± 2.50 mm, respectively) (P values < 0.050) as presented in Table-1. However, the analyses of ROC curve have no difference between both groups regarding volume of endometrial fluid collection or endometrial thickness (P = 0.1) as presented in Figure-1 and Figure-2.

DISCUSSION:

There is variation in the reported prevalence rate of endometrial fluid collection on sonography in post-menopausal females from 4.0% to 14.0%. There are limited research work on the endometrial fluid collection present in asymptomatic post-menopausal females and most of these studies are conflicting. Some researchers have stated the endometrial carcinoma with endometrial fluid collection as an incidental outcome in non-availability of endometrial thickening. Opposite to this point of view, Krissi recommended the sampling of endometrium for all the patients suffering from endometrial fluid collection irrespective of the endometrial thickness. His findings elaborated that fluid can mask the exact pathology by applying pressure on the lining of endometrium. Another research work confirmed that standards like smoothness of endometrial symmetry and lining should be in use to have impacts on decisions to histologically examined patients regardless of the endometrial thickness.

Professionals have examined the patient outcomes in context of endometrial fluid collection with the

endometrial thickening and recommended three to four millimeters as cutoff value which also need the further examination. A three-month sonogram follows up is also recommended for females present with the inconspicuous thin endometria. However, few researchers stated that there may be association of endometrial fluid collection with the malignancy even in presence of measurement of endometria less than 4.0 mm. One other research work recommended the sampling of endo-cervical region in asymptomatic, post-menopausal females present with endometrial fluid collection, even when the ET (Endometrial Thickness) is only 3.0 mm or lower than this; there was also recommendation for the endometrial sampling for the present with the ET (Endometrial Thickness). Breckenridge reported the most striking outcome about the association endometrial fluid collection and malignancy, he stated that carcinoma of cervical or uterine occurred in sixteen out of seventeen patients (94.0%) available with endometrial fluid collection.

In this research work, there was high ET (Endometrial Thickness) and volume of endometrial fluid collection in the patients suffering from hyperplastic and neoplastic pathology, but this association was not observable with the utilization of the analyses of ROC curves. Of one hundred and fifty patients, 2.0% (n: 3) patients were present with malignancies of endometrium or uterine corpus. However, this association of endometrial carcinoma and endometrial fluid collection was not much high as presented in the past nor much low as presented in this research work. There are some limitations of this research work as this research work was a retrospective study and conducted in a single center. There is requirement of further research works with large sample size to consolidate the findings of this research work.

CONCLUSION:

The results of this research work a cutoff value for volume of endometrial fluid collection and endometrial thickness, it is much important to note that the significant rate of malignancy is 2.0%. So, it is important to assess the post-menopausal patients with endometrial fluid collection for endometrial sampling. There is need of further research works to consolidate the findings of this research work.

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