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Comparative evaluation of endometrium on transabdominal and trans-vaginal ultrasound with corroboration of histopathology.

Radiology

KEYWORDS:

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ABSTRACT

AIM: Comparing efficacy of transabdominal sonography (TAS) with transvaginal scan (TVS) in diagnosing endometrial lesion in peri and post menopausal patients and confirming the diagnosis with histopathology. **Material and methods :** This prospective study was conducted in RAMA Medical College, Kanpur from July 2012 to July 2016 in patients attending the outpatient clinic with bleeding per vaginum. Their age, parity ,socio-economic status ,symptoms were recorded and they all were subjected to TAS to localise the pathology . Patient with abnormal endometrial pathology underwent D&C biopsy after TVS, and endometrial tissue was sent for histopathological examination. **Result :** Sensitivity and speciticity OF TAS 52.3 % & 63.2 % while that of TVS is 73.9 % &73.7% respectively.. Diagnostic efficacy of TAS was57.2 % as compared to 73.8 %of TVS. **Conclusion :** For endometrial pathology the TVS is relatively cheap, easy, needs no anaesthesia and non-invasive, it could be used as a first choice diagnostic screening test in the investigation of women with peri and postmenopausal bleeding. TVS can select those cases in which the likelihood of endometrial pathology is high i.e. when the endometrial thickness is 5 mm or more.

INTRODUCTION:

Any bleeding after 12 months or more of complete cessation of menstruation in females of menopausal age group is accepted as post menopausal bleeding, but for all practical purposes any bleeding after 6 months of cessation of menstruation in females of this age group should be considered abnormal and fully investigated. Perimenopause refers to the period immediately before and after the onset of menopause. Although, the duration of perimenopause cannot be predicted in advance, it is generally taken as 5 years before and 1 year after menopause. Although it is not unusual to have irregular bleeding for up to 6 months before menstrual periods stop completely. Unless the bleeding is excessive, or a woman it at high risk for uterine cancer, this is generally not of concern. But the following indicate an abnormal perimenopausal bleeding and should be notified: -

- Bleeding that requires the use of a pad every hour for over 24 hours.
- Bleeding that lasts more than 2 weeks.

In addition, women who are obese, have diabetes, and/or high blood pressure are at increased risk for cancer of the uterus. It is best to evaluate the cause of any irregular bleeding in high risk women. The abnormal uterine bleeding is more common in the perimenopausal then in the post menopausal bleeding and is frequent sign of endometrial proliferation or hyperplastic change. But any cause of post menopausal bleeding should be considered endometrial carcinoma until unless proven otherwise. There are other causes which may lead to it. Senile endometritis, Endometrial hyperplasia, Endometrial polyps, Fibroids, Metropathia haemorraghica , Senile vaginitis, Cervical erosions, Cervicitis, Cervical polyps, Cervical malignancies Fractional curettage always was the ultimate investigation, to rule out endometrial malignancy and other pathologies but at present there is no consensus as to whether curettage or hysteroscopy should be used as gold standard because both procedures are invasive and need to be done under general anaesthesia which carries a small risk of morbidity specially in perimenopausal females.Hence in the last 3 decades efforts have been focused on the development of other techniques that can be used on an OPD bases.

MATERIAL & METHOD

This prospective study was conducted in Rama medical college,sss Kanpur from July 2011 to July 2013 in patients attending the outpatient clinic with perimenopausal & postmenopausal bleeding. Their age, parity ,socio-economic status ,symptoms were recorded and they all were subjected to local examination and transabdominal ultrasound to localise the pathology as the screening procedure. Patient with abnormal endometrial pathology underwent D&C biopsy after transvaginal sonography, and endometrial tissue was sent for histopathological examination. A total of 280 cases with the age between 35 to 85 years ,with perimenopausal & postmenopausal bleeding were included in this study. 60 patients were perimenopausal and 220 patients were postmenopausal. Sixty patients were hypertensive, 30 patients were diabetic, 20 patients did not ever get pregnant before while the remaining patients had no obvious risk factor.All patients underwent transabdominal ultrasonography . In 84 patients TAS revealed pathology, they were advised further evaluation by TVS and biopsy. 42 patients did not come for follow up after preliminary procedure, so they were excluded from the study. Remaining 42 patients who were included in the study, all were postmenopausal and these patients underwent TVS and biopsy. Detailed history of the patients was taken including menstrual history, obstetric history, drug history, personal history,family history. General examination of patients was done. Females with diagnosed genital tract pathologies. genital tract malignancies, obvious genital tract lesions visible by naked eye, known bleeding disorders or females on hormone replacement therapy were excluded from study.

All 280 patients underwent TAS which was done using Siemens Sonoline 50, with full bladder in supine position. TVS was performed by Siemens Sonoline G50 sonography machine using 4-9 MHz transducer while the patient was in supine position with empty bladder Endometrial thickness was measured from the highly reflective interface of the junction of the endometrium and myometrium. This measurement represents two layers of endometrium . The linear distance measured, assuming there was no significant separation of the most superficial layers of endometrium by intracavitory fluid.

The surrounding low amplitude echo layer was not included in the measurement, as this represents the inner layers of compact and vascular myometrium . This layer is symmetrical and intact in all normal postmenopausal uteri and also in all those with endometrial polyps and simple and atypical hyperplasia. It is absent or also analysed for homogenisity, the presence of cysts and fluid. Endometrial thickness of 5 mm for both layers, was taken as cut-off point.

Patients who were diagnosed endometrial pathology on TAS were subjected to TVS and biopsy.

OBSERVATION

TABLE I: Distribution of patients acccording to TAS diagnosis in 280 cases

TAS	No. of Patients	Percentage
Normal	66	23.7
Bulky Cervix	100	35.7
Cervicitis	30	10.7
Atrophy	29	10.4
Polyp	24	8.6
Myoma	1	0.4
Hyperplasia	26	9.4
Carcinoma	2	0.8
Total	**280**	**100%**

- Screening of total 280 was done by TAS .66(23.7%)patients were diagnosed as normal on TAS while 100(35.7%)patients were having bulky cervix.30(10.7%) were diagnosed cervicitis.

- Total 84 patient were diagnosed to have endometrial pathology in transabdominal ultrasound. Endometrial atrophy was diagnosed in 29(10.4%) .Endometrial hyperplasia was diagnosed in 26 cases (9.4%), a polyp was found in 24 cases (8.6%), myoma was found in 1case (0.4%) and endometrial carcinoma in 2 patients(0.8%).

TABLE – II: Distribution of patients with endometrial cause according to histopathological diagnosis in 42 cases

Histopathology	Cases	Percentage
Endometrial Atrophy	19	45.2
Endometrial Hyperplasia	8	19
Endometrial Polyp	11	26
Endometritis	2	4.8
Endometrial Carcinoma	2	4.8
Total	**42**	**100**

- Majority of cases 19 (45.2%) had endometrial atrophy. Endometrial hyperplasia was diagnosed in 8 cases (19%), a polyp was found in 11 cases (26.2%), endometritis was found in 2 cases (4.8%) and endometrial carcinoma was the histopathological report of 2 cases (4.8%).

TABLE –III:- Comparision of TVS and TAS findings with histopathological diagnosis in 42 cases with endometrial pathology.

Histopathology		TVS			TAS		
Diagnosis	No.	Diagnosis	No.	%	Diagnosis	No.	%
Normal atrophy	19	Atrophy	14	73.7	Atrophy	12	63.0
		Polyp	4	21	Polyp	6	31
		Myoma	1	5.2	Myoma	1	5.2
Hyperplasia	8	Hyperplasia	7	87.5	Hyperplasia	5	62.0
		Atrophy	1	12.5	Atrophy	3	37.5
Polyp	11	Polyp	9	80.0	Polyp	6	54.5
		Atrophy	2	20.0	Hyperplasia	5	45.4
Endometritis	2	Hyperplasia	2	0	Hyperplasia	2	0
Carcinoma	2	Carcinoma	1	50	Carcinoma	1	50
		Polyp	1	50	Polyp	1	50

- TAS diagnosed 12(63%) cases of atrophy. Out of 8 cases of hyperplasia ,TAS could diagnose 5 (62%) cases as hyperplasia, 3 as atrophy .Polyp was diagnosed in 6 (54.5%) cases while 5 were diagnosed as hyperplasia.2 cases of endometritis were diagnosed by TAS as hyperplasia.1 (50%)case of carcinoma was diagnosed correctly while other was detected as polyp.

TABLE – IV: Comparision of statistical values of TAS and TVS in patients with endometrial pathology in 42 cases with endometrial pathology.

	TVS	TAS
True + ve (a)	n = 17	n = 12
False - ve (b)	n = 6	n= 11
False + ve (c)	n = 5	n= 7
True - ve (d)	n = 14	n = 12
Sensitivity	73.9%	52.2%
Specificity	73.7%	63.2%
Predictive + ve	77.3%	63.7%
Predictive – ve	70.0%	53.2%
Efficacy	73.8%	57.2%

- Sensitivity and speciticity OF TAS 52.3 % & 63.2 % while that of TVS is 73.9 % &73.7% respectively. Positive Predictive Value and Negative Predictive Value of TVS were also found to be higher than that of TAS and were 77.3% &70 % and 63.7 % & 53.2 %respectively. Diagnostic efficacy of TAS was57.2 % as compared to 73.8 %of TVS.

TABLE V: Endometrial thickness measured by TVS in relation to histopathological findings.

Histopathology	TVS Endometrial thickness mean + s.d. (range)
Atrophy	3.8 ± 1.8 (2 - 6)
Hyperplasia	12.9 ± 7.2 (4 - 26)
Endometritis	12.5 ± 0.7 (12.13)
Polyp	15.3± 7.9 (2.29)
Carcinoma	21.1 ± 9.8 (12 - 30)

- The endometrial thickness was significantly lower ($p < 0.001$) among patients with normal atrophic endometrium than in other lesions. Five mm endometrial thickness was taken as a cut-off below which the endometrium was considered normal atrophic and if it is equal or more than 5 mm, endometrial lesion is expected.

TABLE – VI: Statistical analysis taking endometrial thickness less than 5 mm as normal in postmenopausal women

	TVS
True + ve (a)	n = 20
Faise - ve (b)	n = 3
False + ve (c)	n = 5
True - ve (b)	n = 14
Sensitivity	87%
Specificity	73.7%
Predictive + ve	80%
Predictive – ve	82.4%
Efficacy	81%

5 mm endometrial thickness was taken as a cut -off below which the endometrium was considered normal atrophic and if it is equal or more than 5 mm, endometrial lesion is expected. This cut -off gave a false negative results in 3 cases and a false positive results in 5 cases. This rule had a sensitivity of 87%, specificity of 73.7%, predictive value as a positive test 80%, predictive value as a negative test 82.4% and an overall efficacy 81%.

DISCUSSION

The present study has been conducted in 280 patients attending OPD at RAMA hospital, Kanpur with complaints of bleeding per vaginum. All the 280 patients out of which 60 were perimenopausal and 220 were postmenopausal, were subjected to transabdominal ultrasound as the screening method to locate the pathology. Then these patients were subjected to TVS and biopsy to diagnose the underlying pathology and results of diagnostic modalities were compared with each other. The results and observations were compared with the published data of various authors.

Total 84 patient were diagnosed to have endometrial pathology in transabdominal ultrasound. Sensitivity and specificity of TAS 52.3 % & 63.2 % while that of TVS is 73.9 % &73.7% respectively. Positive Predictive Value and Negative Predictive Value of TVS were also found to be higher than that of TAS and were77.3% &70 % and 63.7 % & 53.2 % respectively. Diagnostic efficacy of TAS was57.2 % as compared to 73.8 %of TVS. **Hiroshi T et al (1)** studied results of TAS

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on 234 patients. They found sensitivity & specificity of TAS to be 51.2% &65% respectively. These results are comparable to results of our study. Other studies demonstrated a sensitivity and specificity of TVS to be 96% and 89% respectively (2,3). The endometrial thickness was significantly lower ($p < 0.001$) among patients with normal atrophic endometrium than in other lesions Endometrial thickness was measured by TVS and histopathology was taken as gold standard..Five mm endometrial thickness was taken as a cut - off below which the endometrium was considered normal atrophic and if it is equal or more than 5 mm, endometrial lesion is expected. Other scientist observed that endometrial cut off point of > 4 mm precluded any missed malignancies giving sensitivity of 100% and specificity of 61%. (4,5) .This cut- off gave a false negative results in 3 cases and a false positive results in 5 cases. This rule had a sensitivity of 87%, specificity of 73.7%, predictive value as a positive test 80%, predictive value as a negative test 82.4% and an overall efficacy 81%. Similar results were found in studies of that when an endometrial thickness threshold of 4 or 5 mm is used, the sensitivity for detecting endometrial carcinoma approaches 95% .(6,7,8)

CONCLUSION

For endometrial pathology the TVS is relatively cheap, easy, needs no anaesthesia and non-invasive, it could be used as a first choice diagnostic screening test in the investigation of women with perimenopausal and postmenopausal bleeding. TVS can select those cases in which the likelihood of endometrial pathology is high i.e. when the endometrial thickness is 5 mm or more.

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