Section: Radiology

Research

DIAGNOSTIC HYSTEROSCOPY VERSUS TRANS ABDOMINAL SONOGRAPHY IN EVALUATION OF WOMEN WITH ABNORMAL UTERINE BLEEDING - COMPARATIVE STUDY

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Abstract

Background: To compare the efficacy of Trans abdominal sonography and hysteroscopy in the evaluation of AUB. **Materials and Methods:** The records of all patients who presented to gynaecology outpatient department in a tertiary care hospital from August 2021 to December 2021 with abnormal uterine bleeding were analysed. Data regarding their chief complaints, general and clinical examination findings, USG findings and hysteroscopy findings were analysed from records. **Result:** A total of 100 patients were enrolled in the study. Hysteroscopy reported 98.5% diagnostic accuracy for all the intrauterine pathology compared to TAS which revealed diagnostic accuracy of 95%. Histopathological findings correlated with the hysteroscopy findings in majority of the times as compared to ultrasonographic findings. **Conclusion:** Hysteroscopy is found superior to TAS for detection of endometrial polyp and hyperplasia and it shows 100% validity in detecting submucous fibroid. For diagnosing adenomyosis and in investigating the cause of postmenopausal bleeding, TAS is found to be better than hysteroscopy. Out of the various diagnostic modalities available for evaluation of AUB, hysteroscopy should be used as the initial evaluating tool as it is simple and minimally invasive with high diagnostic accuracy. Clinical significance- the main reason to choose this study is to know the diagnostic accuracy of the two major modalities involved in the evaluation of women with abnormal uterine bleeding.

INTRODUCTION

Abnormal uterine bleeding is defined as the uterine bleeding which is abnormal in amount or occurs outside the normal menstrual cycle.[1] It is a significant clinical entity and affects 14.25% of women of reproductive age and accounts for 66% of hysterectomies.[2]

The diagnostic modalities involved to assess the uterine cavity in case of AUB are TAS, TVS, saline infusion sonography and hysteroscopy. Each method has its own advantages and disadvantages. Ultrasonography is the first line modality used for the evaluation of AUB, as it is a non-invasive method. But on the other hand, it has poor sensitivity in diagnosing intrauterine pathology like endometrial polyp, intrauterine adhesions and septum and submucous fibroid. Hysteroscopy allows direct visualisation and sampling of the uterine cavity. However, the latter method is not cost effective and convenient as ultrasonography, which is associated with less patient discomfort and requires no anaesthesia. Thus; currently available modalities are far from being perfect.[3,4]

This study aimed to compare the diagnostic values of Trans abdominal sonography and hysteroscopy in detecting uterine abnormalities in patients with abnormal uterine bleeding.

MATERIALS AND METHODS

This retrospective study was conducted in the Department of Obstetrics and Gynaecology in a tertiary care teaching Hospital, from August 2021-December 2021. The study population included all patients in the age group of 30-50 years during the study period with AUB and who has undergone both TAS and Hysteroscopy were included in the study. Unmarried women, women who were on medication which alters the bleeding pattern, women with coagulation disorders and women with cervical mass lesions were excluded from the study.

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Data was collected from the records of all patients who presented with AUB regarding their chief complaints, examination findings, USG and hysteroscopy findings. All patients after full clinical evaluation underwent trans abdominal sonography for evaluation of uterus and adnexa using 5-7.5 MHz Any focal lesions like polyp, fibroid, intrauterine adhesions, etc. were noted. Endometrial thickness (ET) was measured in mid-sagittal plane and at the point of maximum thickness of the stripe.

After obtaining pre-anaesthetic fitness, patients underwent hysteroscopy, which was executed with the usual order - inspection of cervix, endocervical canal, uterine cavity, tubal ostia and endometrium. Intra-operative findings were recorded in the case sheets. Endometrial biopsy and procedures like septal resection, polypectomy and myoma resections were performed using appropriate techniques at the same sitting when required. Statistical analysis was done and sensitivity, specificity, positive predictive value, negative predictive value and accuracy was calculated with 95% confidence interval and 5.88% marginal error.

RESULTS

A total of 100 patients were enrolled in the study. Sonography and hysteroscopy findings were compared from the records of the patients. The average age of presentation was 30-50 years. The most common presenting symptom was menorrhagia in 65/100 (65 %) of cases.

[Table 1] shows that the commonest complaint was menorrhagia in 65 out of 100 cases. The less common symptoms were hypomenorrhea and mass per vagina found in 5% and 4% of women.

[Table 2] shows that normal uterine size was seen in majority (66%) of patients, whereas size of 6 weeks and 8 weeks was seen in 9 and 10 cases. Uterine size of 10 weeks or more was seen in 15% of the cases.

[Table 3] enumerates the TAS findings. In TAS, we found that 52 patients had normal endometrium with thickness of < 12 mm, which was confirmed in 40 cases in histopathology. In 24 patients, the endometrium is thickened up to > 12 mm, which was again confirmed by histopathology in only15 patients. Endometrial polyp was diagnosed in 12 patients and submucous fibroid in 7 patients. 2 patients who had irregular bleeding had products of conception and IUCD insitu.

[Table 4] illustrates the sensitivity, specificity, positive predictive value, negative predictive value and accuracy of transabdominal sonography in detecting various intrauterine lesion.

Hysteroscopy findings seen have been tabulated in [Table 5]. In 46 cases hysteroscopy did not reveal any abnormalities in the uterine endometrium which was confirmed by histopathology in 44 cases. Polypoidal endometrium and endometrial polyp was noted in 21 and 15 cases which was confirmed in 17 and 13 cases in histopathology. Submucous fibroid noted in 7 cases was proved by histopathology in 6 cases.

Considering histopathology diagnosis as the gold standard, hysteroscopy failed to diagnose the following lesions,

- 1 case of fibroid was misdiagnosed as polyp
- 2 case of endometrial polyp was diagnosed as submucous fibroid
- 4 cases of hyperplasia were diagnosed as the functional endometrium
- 1 case of endometrial carcinoma was diagnosed as endometrial hyperplasia

[Table 6] illustrates the sensitivity, specificity, positive predictive value, negative predictive value and accuracy of hysteroscopy in detecting various intrauterine pathology.

[Table 7] shows the correlation between TAS and hysteroscopy findings. Out of 100 cases, hysteroscopy findings matched the TAS findings 88 times and a variance noted with the TAS findings in 12 cases. In 52 cases, where the TAS findings suggested a normal uterine cavity, a normal uterine cavity was confirmed by hysteroscopy in 46 cases. On three occasions, a thickened endometrium on TAS was proved to be endometrial polyp on hysteroscopy.

The results of our study were analysed statistically. Hysteroscopy findings of a normal endometrium has an accuracy 98% whereas finding of a thickened endometrium has an accuracy of 96%. TAS has an accuracy of 95% in diagnosing of endometrial polyp. Accuracy of TAS is the diagnosis of submucous fibroid was found to be 100% in our study.

Hysteroscopy showed strongest correlation with the histopathology findings in detection of the majority of the intrauterine pathology as compared to TAS which shows weak correlation with histology.

Table 1: Various forms of AUB

Complaints	No	%
Menorrhagia	65	65%
Hypo menorrhagia	5	5%
Metrorrhagia	11	11%
Polymenorrhagia	15	15%
Mass per vagina	4	4%

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Table 2: Uterine size

Uterine size	N:100
M	66
6Weeks	9
8 Weeks	10
10Weeks or >	15

Table 3: TAS and Histopathology findings

TAS findings	No	Histopathology correlation
Normal Endometrium(<12mm)	52	40
Thickened Endometrium(>12mm)	24	15
Endometrial polyp	12	7
Submucous fibroid	7	7
RPOC	2	1
IUCD	2	-
Mullerian anomaly	1	-

Table 4: Statistical analysis of TAS findings

	Sensitivity (%)	Specificity (%)	Positive predictive value (%)	Negative predictive value (%)	Accuracy (%)
Normal endometrium	76.92	100	100	80	88
Thickened endometrium	62.5	100	100	89.4	91
Endometrial polyp	58.3	100	100	94.6	95
Submucosal fibroid	100	100	100	100	100
RPOC	50	100	100	98.9	99

Table 5: Hysteroscopy and Histopathology

Hysteroscopy findings	Number	Histopathology correlation
Normal Endometrium	46	44
Polypoidal Endometrium (endometrial hyperplasia)	21	17
Dysfunctional endometrium	5	4
Endometrial polyp	15	13
Submucous fibroid	7	6
RPOC	2	2
IUCD	2	-
Mullerian anomaly	2	-

Table 6: Statistical analysis of hysteroscopy findings

	Sensitivity (%)	Specificity (%)	Positive predictive value (%)	Negative predictive value (%)	Accuracy (%)
Normal endometrium	95.6	100	100	96.4	98
Thickened endometrium	80.95	100	100	95.18	96
Dysfunctional endometrium	80	100	100	98.96	99
Endometrial polyp	86.67	100	100	97.7	98
Submucosal fibroid	85.7	100	100	98.94	99
RPOC	100	100	100	100	100

Table 7: Correlation of TAS and Hysteroscopy findings

Findings	TAS	Hysteroscopy
Normal Endometrium	52	46
Thickened endometrium	24	21
Endometrial polyp	12	15
Submucous fibroid	7	7
RPOC	2	2
IUCD	2	2
Mullerian anomaly	1	1

DISCUSSION

The various diagnostic modalities available for the evaluation of endometrial pathology in patients with AUB are sonography, SIS and hysteroscopy. In the present study, diagnostic ability of TAS and hysteroscopy keeping histopathology as the gold standard were compared. Abdominal sonography is a simple, non-invasive diagnostic modality in detecting intrauterine pathology, but variations have been observed in the literature about its sensitivity and specificity.

The age of the patients in the present study ranged from 30-50 years. Majority of the patients belongs to the age group of 31-40 years (62%) followed by 38% in the age group of 41-50 years. Similarly, Giannotti's et al (2003) in their study included patients in the age group range 28-50 years. They found maximum patients in the age group of 30-45 which is almost comparable to our study. R.

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Somlatha et al (2013) had a maximum incidence of AUB between 30-40 years.[5,6]

The present study was undertaken to evaluate the efficacy of TAS in patients with AUB as compared to hysteroscopy taking histopathology as the gold standard diagnosis. Out of 100 patients, 52 had normal endometrial findings on ultrasound. Wood et al,[7] in their study of menorrhagia, had found that 33 of 97 patients had normal uterine cavity. We used 12mm thickness of endometrium as the upper limit of normal in premenopausal patients beyond which it was called as thickened endometrium. Vercelli et al used 14mm as the cut-off for normal whereas Emmanuel et al used 12 mm as the cut-off.[8,9]

TAS has an accuracy of 95% in diagnosing endometrial polyp. Accuracy of TAS in diagnosing submucous fibroid was found to be 100% in our study, which is similar to a study conducted by Indman et al,[10] who found out that TVS was 99% successful in detecting submucous myomas. Meta-analysis by Farquhar et al,[11] found that TVS is less accurate that saline hysterography and hysteroscopy in diagnosing submucous fibroids, which is contrary to our findings.

In the present study, out of 24 patients who were diagnosed with endometrial hyperplasia in TAS, only 15 cases were confirmed by histopathology. This shows that the false positive rates were high on sonography. The reliability of ultrasound in diagnosing various causes of thickened endometrium is also poor. Similar findings have been reported by Wanderley MS et al11 and De Vries LD et al.[12] However, Veena BT and Shivalingaiah N.[13] reported lower sensitivity of 37.5%.

The findings of sub mucosal fibroid, endometrial polyp and normal endometrium were obscured by thickened endometrium. Visualisation of endo-myometrial echo is influenced by many factors such as uterine position, menstrual phase, myometrial lesions distorting the endometrial cavity and resolution of the imaging tool. These all factors may lead to reduction in the diagnostic accuracy of sonography. Not even a single case of histologically diagnosed endometrial carcinoma were suspected on sonography. Similar finding was noted by Wanderley MS et al.[11] Considering the number of false negative cases by sonography, mandates the use of more efficacious diagnostic tool i.e. hysteroscopy to investigate the cause of AUB.

CONCLUSION

To conclude, hysteroscopy is superior to TAS in detecting all endometrial lesions, hence should be used as the initial evaluating tool in AUB as it is simple and minimally invasive with high diagnostic accuracy.

Clinical Significance

We strongly recommend that hysteroscopy should be used as the first method of choice to evaluate the cause of AUB so that further medical or surgical management can be choosen wisely.

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