



ROLE OF TRANSVAGINAL ULTRASOUND IN DETECTION OF ENDOMETRIAL ABNORMALITIES IN BREAST CANCER PATIENTS UNDER TAMOXIFEN THERAPY

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Background

Background: Tamoxifen is a selective estrogen receptor modulator (SERM) that is widely used in the treatment of breast cancer patients who are estrogen receptor positive. Most studies have found that the increased relative risk of developing endometrial cancer for women taking tamoxifen is two to three times higher than that of an age-matched population.

Keywords: Breast Cancer, Endometrium, Endometrial Changes, Tamoxifen, Ultrasound.

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INTRODUCTION

Aim of study: The aim of the study is to evaluate the role and efficacy of transvaginal ultrasound in detection of endometrial changes in breast cancer patients under tamoxifen therapy in correlation with histopathological results of endometrial biopsies. **Study type and sample size:** This is a cross-sectional retrospective study which was conducted in the department of radiology KIRAN Hospital Karachi over a period of one year from May 23 to April 24 in total 50 patients. **Inclusion criteria:** Histologically confirmed hormone receptor-positive breast cancer on tamoxifen with a dose of 20mg/day for a period ranging from 6 months up to 5 years were included. All patients were Post-menopausal women or tamoxifen-induced menopausal patients. **Exclusion criteria:** Breast cancer patients not under hormonal therapy, virgin patients, patient on tamoxifen with duration of < 6 months.

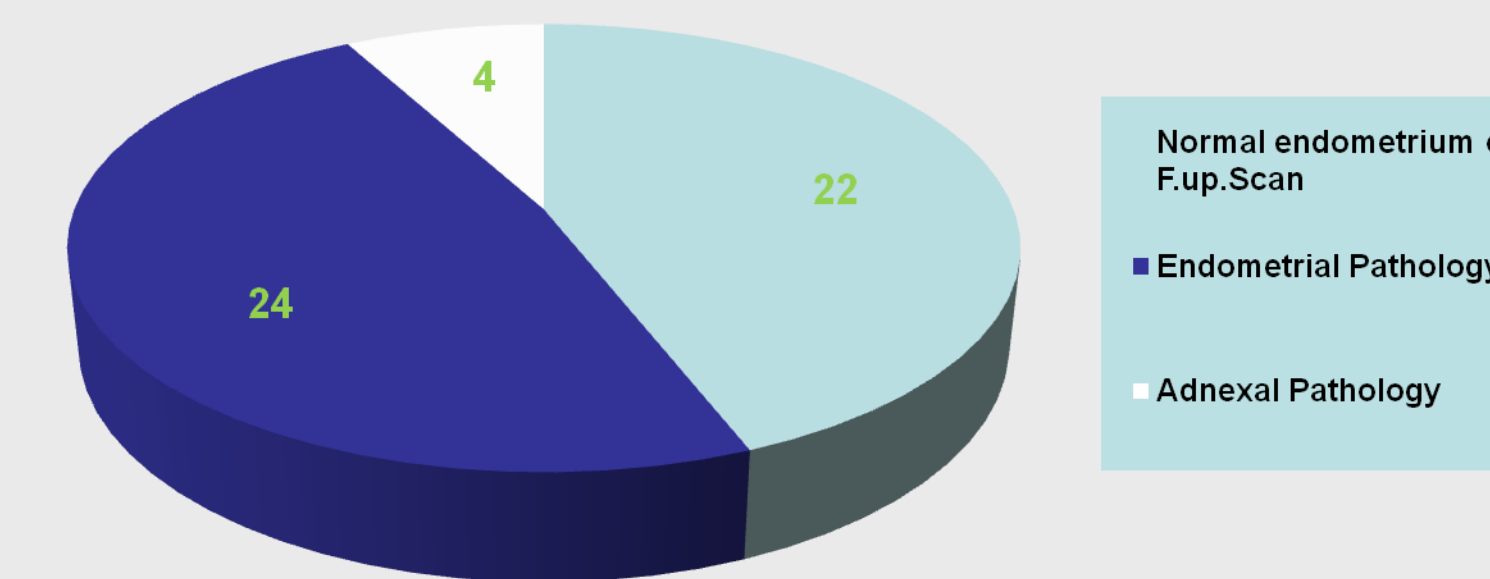
Material and methods: In our study, real-time ultrasound was performed using GE Logic S-8 ultrasound machine with the vaginal transducer (5–10 MHz). A look by transabdominal US with full bladder is taken before starting the transvaginal scan because it had a large scale of view to assess the overall appearance of pelvic viscera. TVS examination includes a full detailed study of the uterus (size, axis, endometrium thickness, cystic changes in myometrium), cervix and cervical canal, ovaries, any adnexal abnormality and fluid in the cul-de-sac. For the examination technique, the whole procedure was explained to the patient, and written consent was taken. Patients with endometrium of more than 10-mm thickness were scanned repeatedly every 3 months. We analyzed the data from previous scans and current scan and correlated it with the results of histopathology. Clinical and ultrasound data were compared with the final histological diagnosis of the endometrium, which was obtained by D&C or hysterectomy specimen.

RESULTS

Results: A total of 50 patients were evaluated in our study. Their age ranged from 40 to 55 years old; their mean age was 47.5 years. Twenty patients (40%) were with positive family history of breast cancer. All patients done surgical treatment, received chemo/radiotherapy and hormonal treatment (tamoxifen) during the treatment over a period of 6 months to 5 years. Twenty-two patients (44%) had found normal regular endometrium on follow-up scans, and twenty-eight patients (56%) had abnormal US appearance with different types of pathology (Graph 1). Out of 28 patients: 24 patients (85.7%) presented with endometrial abnormality and 4 patients (14.3%) showing adnexal pathology (simple ovarian cyst/ hemorrhagic cyst). The twenty-four patients with endometrial abnormality underwent D&C and results were as follows: 14% endometrial hyperplasia, 10% endometrial atrophy, 7% endometrial polyp and 4% endometrial carcinoma (see Graph 2). Association between duration of tamoxifen therapy (Table 1) and presence of pathology in TVS were also evaluated and revealed that patients with a period of treatment with tamoxifen ranging from 6 months up to 5 years had no side effects from it. While patients with a period of tamoxifen treatment ranging from 7 months up to 5 years had side effects from it. In our study, we detected that there is a significant risk of pre-malignant and malignant lesions of endometrium in patients on long-term tamoxifen use. So, we recommend that all patients on long-term tamoxifen use should be annually screened for endometrial pathology.

DISCUSSION

Discussion: Ultrasound is the first-line imaging modality for evaluation of the uterus and ovarian diseases. Ultrasound is sensitive, but not specific for evaluating endometrial abnormalities. The normal postmenopausal endometrium appears as a single echogenic line and should not exceed 5 mm as a bilayer thickness. Most women undergoing tamoxifen treatment (Table 2) have a thicker endometrium compared with women not on tamoxifen (9–13 mm versus 4.0–5.4 mm). Regardless of the cutoff value for detecting endometrial abnormalities, the most common endometrial transvaginal US pattern seen in women treated with tamoxifen is a thickened endometrium with cystic spaces described as a 'Swiss cheese' pattern followed by thickened echogenic homogeneous endometrium.



Graph 1 showing percentage of normal endometrium, endometrial pathology & adnexal pathology

Duration of Tamoxifen therapy	No. of patient (n=50)
6 months-1 year	29
>1-2 years	6
>2-3 years	8
>3-4 years	4
>4-5 years	3

Table 1: Distribution of pt. according to duration of tamoxifen therapy.

Endometrial thickness (mm)	No. of patient (n=50)
Up to 5mm	30
5.1 to 10mm	15
10.1 to 15mm	2
15.1 to 20mm	1
>20 mm	2

Table 2: Distribution of pt. according to endometrial thickness.

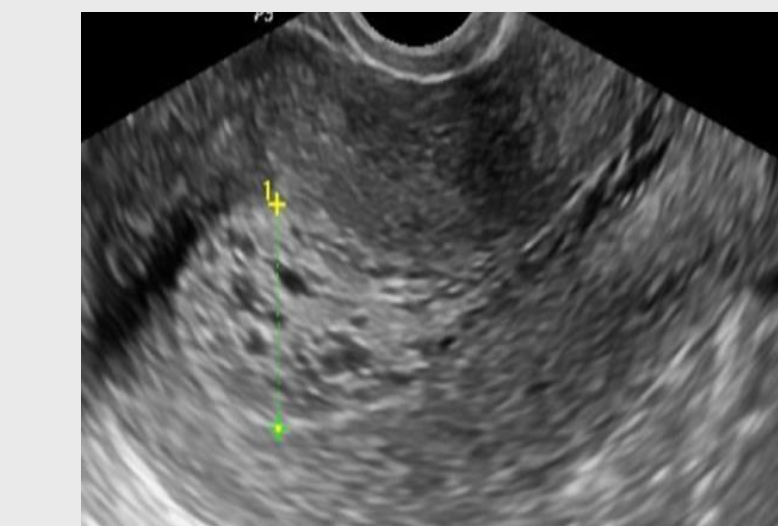


Figure 1: TVUS sagittal view showing endometrial hyperplasia

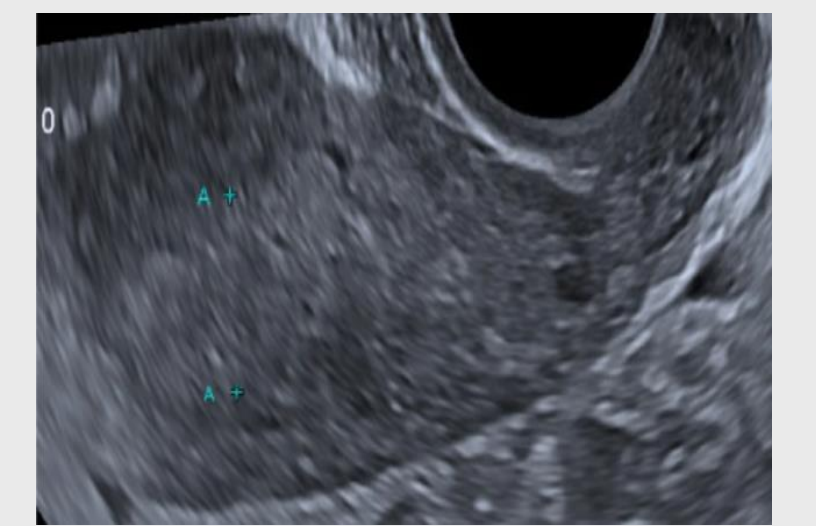
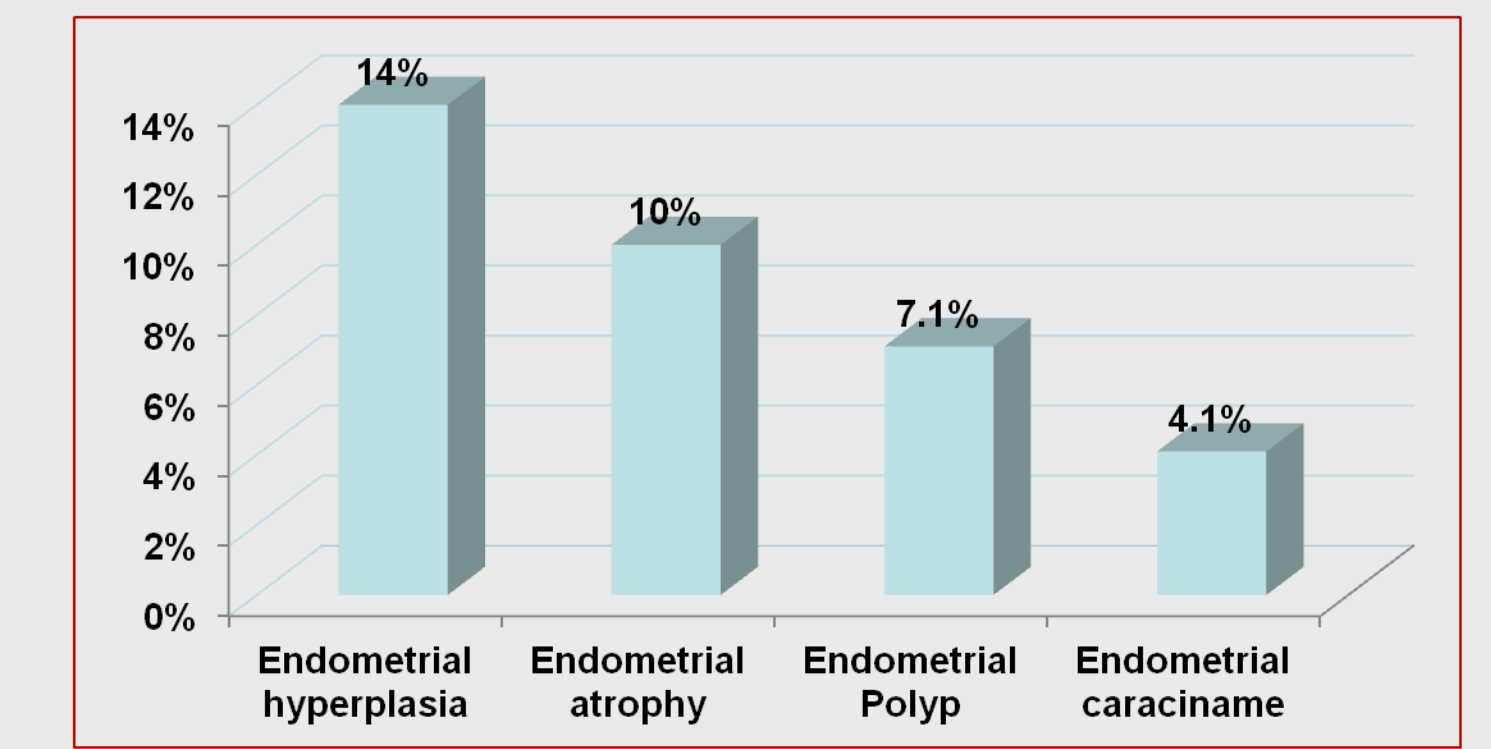


Figure 2: TVUS sagittal view showing endometrial carcinoma



Graph 2 showing results of endometrial pathology

CONCLUSIONS

Conclusions: It was found in our study that transvaginal ultrasonography is a sensitive and rather specific method to evaluate the endometrial changes, but often this modality does not provide the physician with sufficient diagnostic information. So we need endometrial biopsies in those patients with positive TVUS findings due to higher sensitivities, specificities, positive and negative predictive values for evaluating breast cancer patients taking tamoxifen. Such a screening procedure is important in an attempt to detect endometrial cancers earlier as those patients worry a great deal about developing a second cancer.

REFERENCES

- References:**
- Seul Lee, Yun Hwa Kim, Seung Chul Kim, et al: The effect of tamoxifen therapy on the endometrium and ovarian cyst formation in patients with breast cancer; *Obstet Gynecol Sci.* 2018 Sep;61(5):615-620.
 - B Gerber, A Krause, H Müller, et al: Effects of adjuvant tamoxifen on the endometrium in postmenopausal women with breast cancer: a prospective long-term study using transvaginal ultrasound; *J Clin Oncol.* 2000 Oct 15;18(20):3464-70.
 - i-Jin Ryu, Min Sun Kim, Ji Yoon Lee, Seunghyun Nam, et al: Risk of Endometrial Polyps, Hyperplasia, Carcinoma, and Uterine Cancer After Tamoxifen Treatment in Premenopausal Women With Breast Cancer; *JAMA Netw Open.* 2022 Nov 1; 5(11).