

The Importance of the Correlation between the Ultrasonographic Evaluation of Endometrium and Histopathological Findings in Patients with Endometrial Hyperplasia and Carcinoma

V. STOENESCU¹, M.B. NOVAC², LORENA DIJMARESCU³,
MAGDA MANOLEA³, LILIANA NOVAC³, P. TOMESCU⁴, MIHAELA NICULESCU⁵

¹University of Medicine and Pharmacy of Craiova, Romania

²Anesthesiology and Intensive Care Department, University of Medicine and Pharmacy of Craiova, Romania

³Obstetrics and Gynecology Department, University of Medicine and Pharmacy of Craiova, Romania

⁴Urology Department, University of Medicine and Pharmacy of Craiova of Craiova, Romania

⁵Department of Human Anatomy, University of Medicine and Pharmacy of Craiova, Romania

ABSTRACT: Purpose. The aim of this study was to estimate how ultrasonographic evaluation of endometrium and histopathological findings are correlated in a group of premenopausal and postmenopausal women. Material and Methods. I have studied 106 premenopausal and postmenopausal women who underwent endometrial biopsy based on results of transvaginal ultrasonography. Results. Mean age of patients was 52.29±8.14 years. Postmenopausal status <10 years was common in 20 patients (18.86%), postmenopausal status >10 years was common in 21 patients (19.81%), and premenopausal status in 65 patients (61.32%). Transvaginal sonography reported EH in 97 cases (91.50%) and EH was confirmed by pathology in 88 cases (83.01%). Conclusion. Endometrial thickness was correlated with histopathological diagnosis much better in postmenopausal women.

KEYWORDS: ultrasonography, endometrial thickness, histopathological lesions

Introduction

Endometrial cancer is among the most common gynecological cancers in Europe with an increasing incidence in postmenopausal women [1]. Endometrial hyperplasia (EH) is clinically important because it can progress to endometrial cancer or coexist with it. In premenopausal and postmenopausal women with abnormal uterine bleeding (AUB), EH suspicion may be based on transvaginal ultrasound and the certitude diagnosis is established only by endometrial biopsy.

Ultrasound evaluation of endometrial thickness has been shown to be an important method in the evaluation of postmenopausal bleeding patients [5].

In premenopausal women with AUB, the predictive performance of ultrasonographic endometrial thickness measurement and the establishment of a cut-off levels showed different results. The accuracy of ultrasound diagnosis in premenopausal women is lower than in postmenopausal women [3,8].

In the literature, a 5mm cut-off of endometrial thickness was established by transvaginal ultrasonography to exclude endometrial malignant lesions in

postmenopausal symptomatic women [6]. A 2010 study discussed the opportunity to establish a 3mm endometrium thickness as a cut-off [10].

A cut off for transvaginal sonography of 11mm was suggested for asymptomatic postmenopausal women [4]. In premenopausal women, a cut-off of the thickness of the endometrium remains controversial, but most studies reported that the thickness of the endometrium ≥ 8 mm requires a more careful investigation. [7].

Material and Methods

In the study we enrolled 93 premenopausal and postmenopausal women with AUB and 13 (12.26%) asymptomatic (without bleeding) postmenopausal women, all with EH. They were included subjects with endometrial causes of AUB and were excluded those with fibroids, cervical, vaginal and hemostatic disorders. The transvaginally ultrasound was performed, for evaluated the endometrial thickness. Endometrial biopsy was performed by dilatation and curettage. All participants gave written consent according to Helsinki declarations and The Ethics Committee of University of Medicine and Pharmacy of Craiova.

Results

Mean age of patients was 52.29±8.14 years. Postmenopausal status <10 years was common in 20 patients (18.86%), postmenopausal status

>10 years was common in 21 patients (19.81%), and premenopausal status in 65 patients (61.32%) (Table 1).

Table 1. Correlation of histological lesions with menopausal status

Menopausal status	Menopause <10 years	Menopause >10 years	Premenopause	Total
Total	20 (100.00%)	21 (100.00%)	65 (100.00%)	106 (100.00%)
EH simple without atypia	10 (50.00%)	7 (33.33%)	52 (80.00%)	69 (65.09%)
EH simple with atypia	10 (50.00%)	4 (19.05%)	12 (18.46%)	26 (24.53%)
EH complex without atypia	5 (25.00%)	4 (19.05%)	9 (13.85%)	18 (16.98%)
EH complex with atypia	0 (0.00%)	6 (28.57%)	12 (18.46%)	18 (16.98%)
Polip without EH	1 (5.00%)	8 (38.10%)	5 (7.69%)	14 (13.21%)
Polip with EH	1 (5.00%)	4 (19.05%)	0 (0.00%)	5 (4.72%)
EC	1 (5.00%)	2 (9.52%)	7 (10.77%)	10 (9.43%)

EC=endometrial cancer; EH= endometrial hyperplasia

A large proportion of cases, 57 cases (53.77%) had concomitant lesions: simple or complex EH without atypia associated with simple or complex EH with atypia, or simple or complex EH with atypia associated with EC (Table 2).

When considering the thickness and abnormalities of the endometrium, endometrial ultrasound has an increased susceptibility to suspected endometrial cancer in postmenopausal and premenopausal women (Table 3).

Table 2. Distribution by histopathological features of the endometrium

Histopathological report	No	%
Simple EH without atypia	69	65.09
Simple EH with atypia	27	24.52
Complex EH without atypia	18	16.98
Complex EH with atypia	18	16.98
EC	10	9.43
Concomitent lesions (EH±EC)	8	7.54

EC=endometrial cancer; EH=endometrial hyperplasia

Table 3. Endometrial thickness correlated with menopausal status

Menopausal status	Premenopause	Menopause <10 years	Menopause >10 years	Total
Endometrial thickness 5-10mm	20 (30.77%)	14 (70.00%)	9 (42.86%)	43 (40.57%)
Endometrial thickness >10mm	45 (69.23%)	6 (30.00%)	12 (57.14%)	63 (59.43%)
Total	65 (100.00%)	20 (100.00%)	21 (100.00%)	106 (100.00%)



Fig. 1. Transvaginal ultrasound, asymptomatic postmenopause. Endometrial thickness 16mm



Fig. 2. Transvaginal ultrasound, symptomatic postmenopause. Endometrial thickness 7.7mm

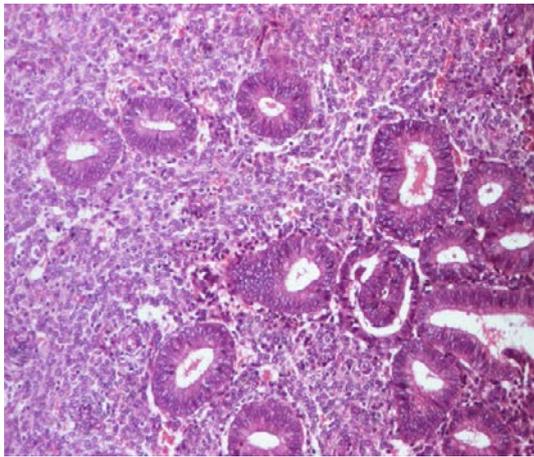


Fig. 3. Simple EH with and without atypia.
HE Staining Oc 10 x Ob 10

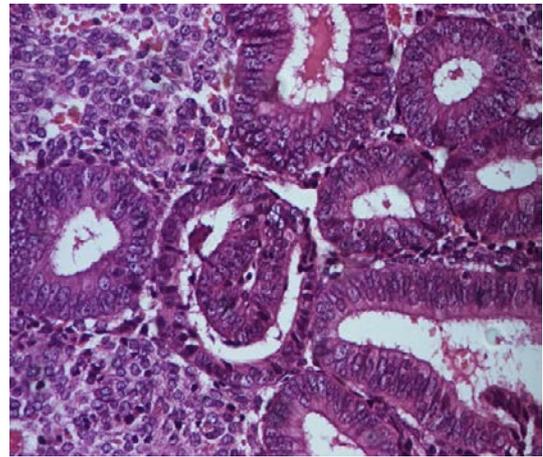


Fig. 4. Simple EH with atypia.
HE Staining Oc 10 x Ob 10

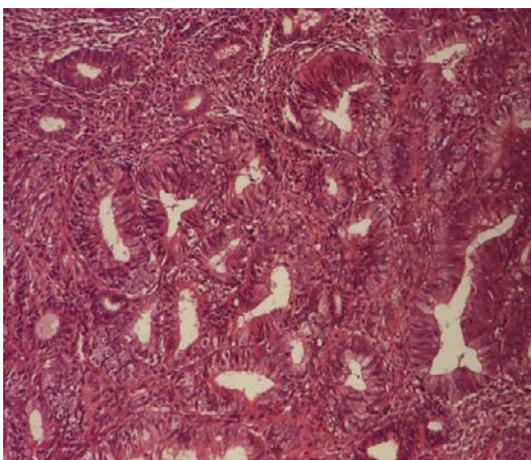


Fig. 5. Complex EH with atypia.
HE Staining Oc 10 x Ob 10

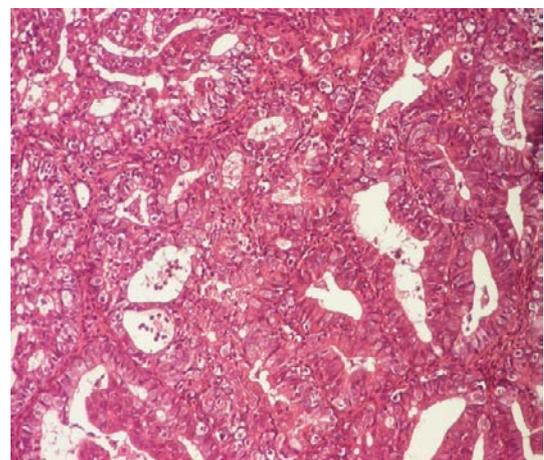


Fig. 6. Endometrioid adenocarcinoma well differentiated. HE Staining Oc 10 x Ob 10

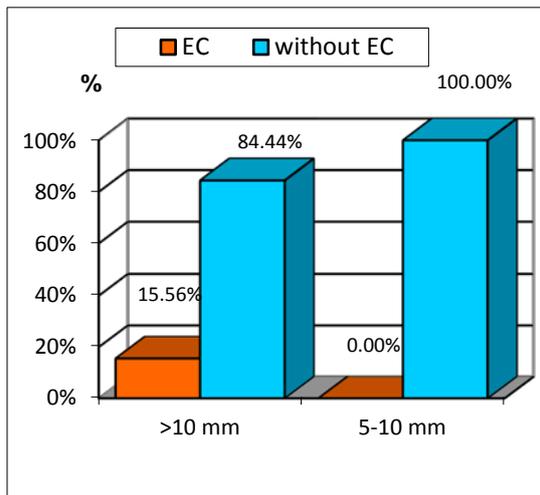


Fig. 7. Relationship between endometrial premenopausal thickness and EC

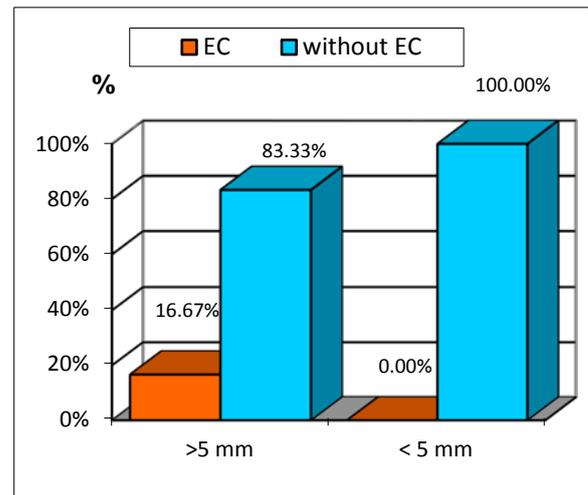


Fig. 8. Relationship between endometrial postmenopausal thickness and EC

Regarding premenopausal cases, in cases where the endometrial thickness was >10mm, the EC risk was 15.56%, unlike the rest of the cases with EH, where the endometrial thickness ranged between 5-10mm and the EC risk was

not present. Analyzing the postmenopausal EC risk, we found that in cases with a postmenopausal endometrial thickness >5mm we have a 16.67% EC risk.

Discussion

A long time was believed that the use of transvaginal ultrasound may be a screening test for endometrial cancer screening. Jacobs et al. in a 2011 study conducted in 2000 women, noticed as a endometrial cut-off of 5mm, sensitivity and specificity was 80.5%-85.7% respectively, for EC or AEH [6]. The study confirms the relationship between endometrial thickness and subsequent diagnosis of endometrial cancer, by endometrial sampling.

Many more studies have studied the importance of transvaginal ultrasound to measure endometrial thickness in postmenopausal women than in the premenopausal women [2,5].

However, transvaginal ultrasound must be properly used so that the potential prediction of malignant lesions does not lead to unnecessary interventions given that endometrial cancer is usually present with uterine bleeding in an early and non-advanced stage.

In symptomatic postmenopausal women a cut-off of 5mm was set for endometrial malignancy [gupta] and a cut-off value of 11mm was suggested as the limit at which endometrial biopsy will be done in asymptomatic postmenopausal women [9], but a screening of endometrial thickness by transvaginal ultrasound, does not seem enough specificity for endometrial cancer, to these cases [11].

In our study, looking at the relationship between endometrial thickness and EC risk, we found higher percentages (15.56% in premenopausal women and 16.67% in postmenopausal women) compared to the EC incidence in the literature, in these situations.

We found a positive correlation between the thickness of the endometrium and the histopathological diagnosis of EH and EC, 88 cases (83.01%) with endometrial thickness over cut-off levels being histologically confirmed.

In most cases, clinical strategy should be restricted, but if we have risk factors for endometrial cancer (age, obesity, long-term treatment with estrogen alone) is justified an active strategy.

Conclusions

Endometrial thickness was correlated with histopathological diagnosis much better in postmenopausal women.

References

1. Bray F, Dos Santos Silva I, Moller H, Weiderpass E. Endometrial cancer incidence trends in Europe: underlying determinants and prospects for prevention. *Cancer Epidemiol Biomarkers Prev* 2005; 14: 1132-42
2. Davidson KG, Dubinsky TJ. Ultrasonographic evaluation of the endometrium in postmenopausal vaginal bleeding. *Radiol Clin North Am.* 2003;41:769-80
3. Getpook C, Wattanakumtornkul S. Endometrial thickness screening in premenopausal women with abnormal uterine bleeding. *J Obstet Gynaecol Res* 2006; 32: 588-592
4. Godoy CE Jr, Antunes A Jr, Morais SS, Pinto-Neto AM, Costa-Paiva L. Accuracy of sonography and hysteroscopy in the diagnosis of premalignant and malignant polyps in postmenopausal women. *Rev Bras Ginecol Obstet*, 2013;35:243-8
5. Gupta JK, Chien PF, Voit D, Clark TJ, Khan KS. Ultrasonographic endometrial thickness for diagnosing endometrial pathology in women with postmenopausal bleeding: A metaanalysis. *Acta Obstet Gynecol Scand.* 2002;81:799-816
6. Jacobs I, Gentry-Maharaj A, Burnell M, Manchanda R, Singh N, Sharma A, Ryan A, Seif MW, Amso NN, Turner G et al. Sensitivity of transvaginal ultrasound screening for endometrial cancer in postmenopausal women: a case-control study within the UKCTOCS cohort. *Lancet Oncol.* 2011 Jan;12(1):38-48
7. Parihar M, Parihar A. Peri- and Postmenopausal Uterine Bleeding Transvaginal Ultrasound with Hysterosonography and Diagnostic Correlation with Hysteroscopy. *Donald School Journal of Ultrasound in Obstetrics and Gynecology.* 2011; 5(4): 343-352
8. Shokouhi B. Role of transvaginal ultrasonography in diagnosing endometrial hyperplasia in pre- and post-menopause women. *Niger Med J.* 2015 Sep-Oct;56(5): 353-6
9. Smith-Bindman R, Weiss E, Feldstein V. How thick is too thick? When endometrial thickness should prompt biopsy in postmenopausal women without vaginal bleeding. *Ultrasound Obstet Gynecol* 2004; 24: 558-565
10. Timmermans A, Opmeer BC, Khan KS, Bachmann LM, Epstein E, Clark TJ, Gupta JK, Bakour SH, van den Bosch T, van Doorn HC, Cameron ST, Giusa MG, Dessole S, Dijkhuizen FP, Ter Riet G, Mol BW. Endometrial thickness measurement for detecting endometrial cancer in women with postmenopausal bleeding: a systematic review and metaanalysis. *Obstet Gynecol.* 2010;116:160-167
11. Yasa C, Dural O, Bastu E, Ugurlucan FG, Nehir A, İyibozkurt AC. Evaluation of the diagnostic role of transvaginal ultrasound measurements of endometrial thickness to detect endometrial malignancy in asymptomatic postmenopausal women. *Arch Gynecol Obstet.* 2016 Aug;294(2): 3116

Corresponding Author: M.B. Novac, Anesthesiology and Intensive Care Department, University of Medicine and Pharmacy of Craiova, Romania. 2-4 Petru Rareș St. Craiova, Romania, e-mail: mariusnovac2005@yahoo.com