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Exploring Clinical Characteristics in Women with Post-Menopausal Bleeding: The Role of Body Mass Index, Endometrial Thickness, and Histopathological Findings

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Abstract: **Background:** There is a severe clinical problem of postmenopausal bleeding (PMB), which requires in-depth research as it can signify either endometrial cancer or other gynecological complications. **Aim:** The general objective of the study is to investigate the clinical features of women with PMB with an emphasis on the relationship between BMI and endometrial thickness (ET) and outcomes of a histopathological analysis. We investigate the impact of BMI on ET, the trend in histopathological results, and the value of ET in identifying endometrial cancer**. Procedure:** It is a cross-sectional study that conducted a review of data of 122 women with PMB who were observed in Al-Diwaniyah, Iraq, in April 2022 – 2023. The participants were categorized on the basis of demographic and baseline factors. ET was assessed using transvaginal ultrasound and categorized. A review of the histopathological findings was done to isolate benign, precancerous, and malignant lesions. We searched for connections between BMI and ET, BMI, and pathology. Univariate and multivariate logistic regression analyses were also conducted in order to identify risk factors of endometrial cancer**. Findings:** The researchers determined that there was a strong correlation between increased BMI and increased ET, and obese women had more endometrial hyperplasia and cancer. Univariate analysis identified BMI, ET, and age as significant risk factors, and multivariate regression affirmed that BMI and ET were independent predictors**. Conclusion:** This study highlights the need to examine BMI and ET in assessing PMB. One of the risk factors of endometrial disease is obesity. Even though an ET of 10mm and above is an effective screening tool, its assessment needs to be modified by BMI to increase the level of diagnosis. These findings indicate the need to have a personalized risk assessment of women having PMB that involves anthropometric and sonographic measurements that enhance patient outcomes and early cancer detection.

Keywords: Post-Menopausal Bleeding, Histopathology, Obesity, Risk Factors, and Endometrial Thickness.

INTRODUCTION

Post-menopausal bleeding (PMB) is a clinically relevant problem that often causes anxiety in women, as it may be linked to a variety of underlying diseases and conditions, both benign and malignant neoplasms. The correct diagnosis and the effective therapeutic management of PMB are impossible without a comprehensive understanding of the clinical features to which it is related. Body mass index (BMI) is a new determinant of reproductive health [Mendoza, N. *et al*., 2013**;** Campbell, K. E. *et al*., 2017**;** Kim, M. H. *et al*., 2017]**.** Excess adipose tissue may give rise to hormonal perturbation in the form of estrogen production when BMI is 30 or higher (a definition that is widely employed to characterize obesity). The persistent high estrogen level in post-menopausal women can trigger endometrial hyperplasia and increase the likelihood of endometrial cancer, hence making BMI a vital factor in the evaluation of PMB. [Ko, S. H. *et al*., 2020**;** Otify, M. *et al*., 2015**;** Schmandt, R. E. *et al*., 2011]

Endometrial thickness is another important parameter used in the assessment of post-menopausal bleeding. Transvaginal ultrasonography is the main modality of measuring the endometrial thickness, and predetermined levels of the values are worth investigational processes [Junnare, K. K. *et al*., 2019**;** Cho, H. J. *et al*., 2013**;** Dawood, S. N. *et al*., 2019]**.** A value above 4-5mm in the post-menopausal patients is regarded as a sign that there may be underlying pathology present, e.g., hyperplasia or carcinoma. The correlation between the endometrial thickness and the PMB highlights the need to make sure that the imaging methods and the objective measurement guidelines are followed to ensure that the diagnostic assessments are done with accuracy. [Burbos, N. *et al*., 2012]

Histopathological assessment entails the visualization of endometrial samples with a microscope and offers conclusive diagnoses that are used in deciding treatment in postmenopausal bleeding (PMB) [Açmaz, G. Ö. K. H. A. N. *et al*., 2014]**.** An endometrial biopsy is regularly done to find out the cause of abnormal bleeding in cases when the endometrium is thickened. A variety of conditions, including benign polyps [Bakour, S. H. *et al*., 2012]**,** atypical hyperplasia, and endometrial cancer, can be diagnosed through the microscopic

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examination [Wong, A. W. *et al*., 2016]. The association of the histopathology results with the clinical ones, i.e., body mass index (BMI) and endometrial thickness, is a trustworthy source of risk stratification of patients with PMB. The recent studies are concentrated on the interaction of diet, lifestyle, and the occurrence of abnormal histopathologic findings and provide us with a comprehensive approach toward treating patients. [Behera, B. *et al*., 2020]

METHODOLOGY

Study design:

It was a cross-sectional study conducted to find out the clinical features of women with PMB, the effects of BMI and endometrial thickness (ET) on clinical features, and at the relation of these two factors on the histopathologic outcomes of endometrial cancer.

Study Population:

The cohort was chosen by looking at the medical records of all women visiting the PMB clinic at one of the tertiary care gynecology-oncology clinics in Al-Diwaniyah, Iraq, between April 2022 and April 2023. **Inclusion criteria were:**

- 1. Natural or surgery-induced menopause (amenorrhea of 12 months in a woman over 45 years of age or bilateral oophorectomy).
- Present transvaginal ultrasound (TVUS) report with ET obtained in an anteroposterior form.

Exclusion criteria were:

- Hormone replacement therapy or tamoxifen is used within the 12 months.
- Missing clinical/histopathological information.

A sample of 122 consecutive patients was eligible using the inclusion criteria.

Data Collection:

A standardized case report form was used to extract the data. BMI and ET were the main independent variables.

BMI (kg/m 2) was calculated using height and weight at the baseline PMB consultation.

- The patients were classified according to WHO scales underweight (less than 18.5), normal (18.5-24.9), overweight (25 -29.9), and obese (greater than or equal to 30).
- ET was an interval in millimeters and was grouped into <4mm, 4 to 9mm, and 10mm or more according to established PMB assessment levels.

The result was the ultimate histopathological diagnosis: atrophy, endometrial polyp, endometrial hyperplasia (without atypia), endometrial cancer, or other non-neoplastic findings (chronic endometritis).

Statistical Analysis:

Continuous variables Descriptive statistics outlined demographic and clinical variables means, including means, standard deviation, frequencies, and percentages of categorical variables.

Univariate logistic regression was used to evaluate risk factors of endometrial cancer, where the odds ratio (OR) was obtained with 95% confidence interval (CI) of BMI exceeding 30, ET exceeding 10mm, and age exceeding 65.

Variables whose p-value is less than 0.10 in univariate analysis were included in a multivariate logistic regression, and the results were described as adjusted OR. SPSS version 26.0 was used in the analyses; $p < 0.05$ was regarded as statistically significant.

FINDINGS

Table 1: Baselines and clinical features of 122 women with post-menopausal bleeding.

Characteristic	**Total (n = 122)**
Age (years), Mean ± SD	62.4 ± 6.8
BMI (kg/m²), Mean ± SD	28.5 ± 5.2
BMI Categorizes:	
- Underweight (<18.5)	4 (3.3%)
- Normal (18.5–24.9)	36 (29.5%)
- Overweight (25–29.9)	45 (36.9%)
- Obese (≥30)	37 (30.3%)

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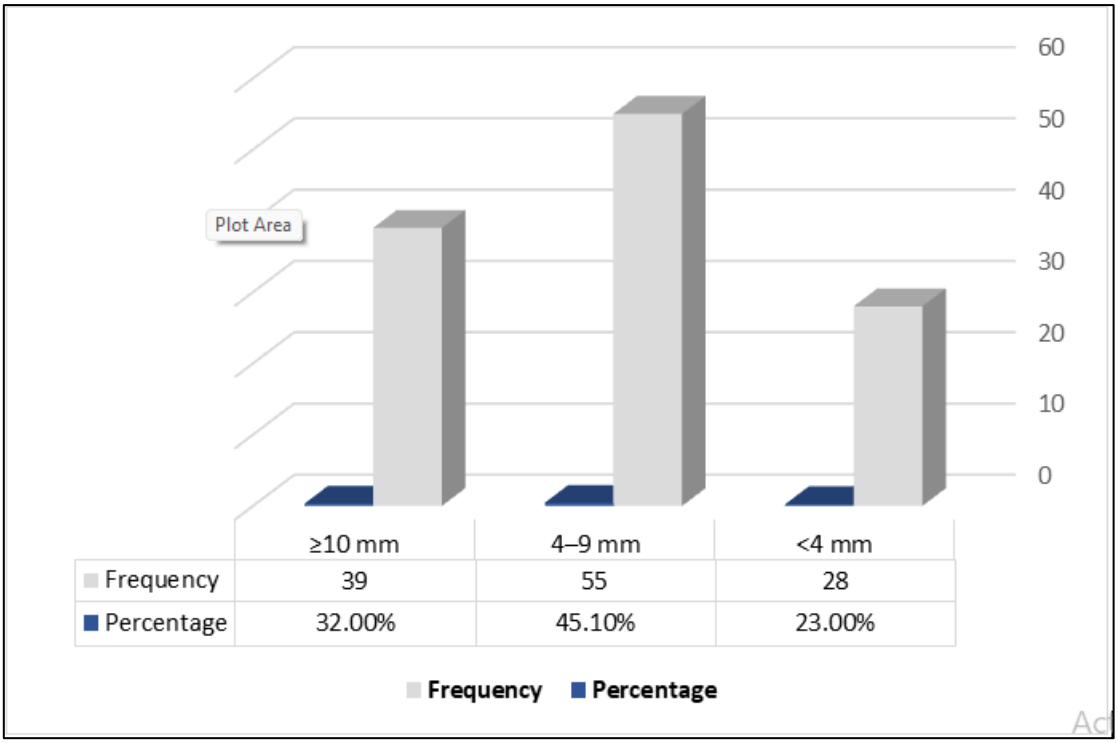

Figure 1: Distribution of diagnostic outcomes of the endometrial thickness (ET) in the patients.

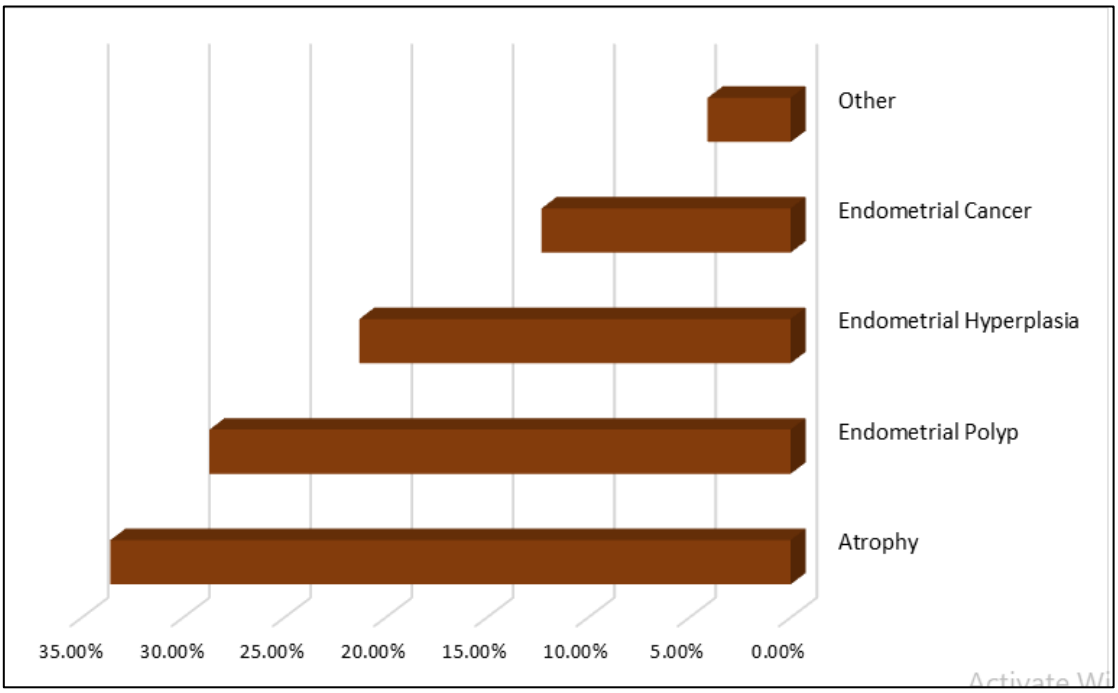

Figure 2: Classification of clinical features of histopathological outcomes in the 122 women with post-menopausal bleeding.

Table 2: Assessment of the correlation outcomes among BMI and endometrial thickness.

BMI Categorizations	ET <4 mm	ET 4–9 mm	ET ≥10 mm
Underweight	2 (50.0%)	1 (25.0%)	1 (25.0%)
Normal	12 (33.3%)	18 (50.0%)	6 (16.7%)
Overweight	8 (17.8%)	20 (44.4%)	17 (37.8%)
Obese	6 (16.2%)	16 (43.2%)	15 (40.5%)

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Table 3: Identifying the correlation among BMI and histopathology.

BMI Category	Atrophy	Polyp	Hyperplasia	Cancer
Underweight	3 (75.0%)	1 (25.0%)	0 (0.0%)	0 (0.0%)
Normal	18 (50.0%)	11 (30.6%)	4 (11.1%)	3 (8.3%)
Overweight	12 (26.7%)	14 (31.1%)	12 (26.7%)	7 (15.6%)
Obese	8 (21.6%)	9 (24.3%)	10 (27.0%)	5 (13.5%)

Table 4: Evaluation of the status of endometrial cancer based on endometrial thickness and body mass index.

Endometrial Thickness (mm)	BMI <25	BMI ≥25	Total Cancer (n=15)
<4 mm	0 (0.0%)	0 (0.0%)	0 (0.0%)
4–9 mm	2 (18.2%)	3 (75.0%)	5 (33.3%)
≥10 mm	1 (9.1%)	9 (81.8%)	10 (66.7%)

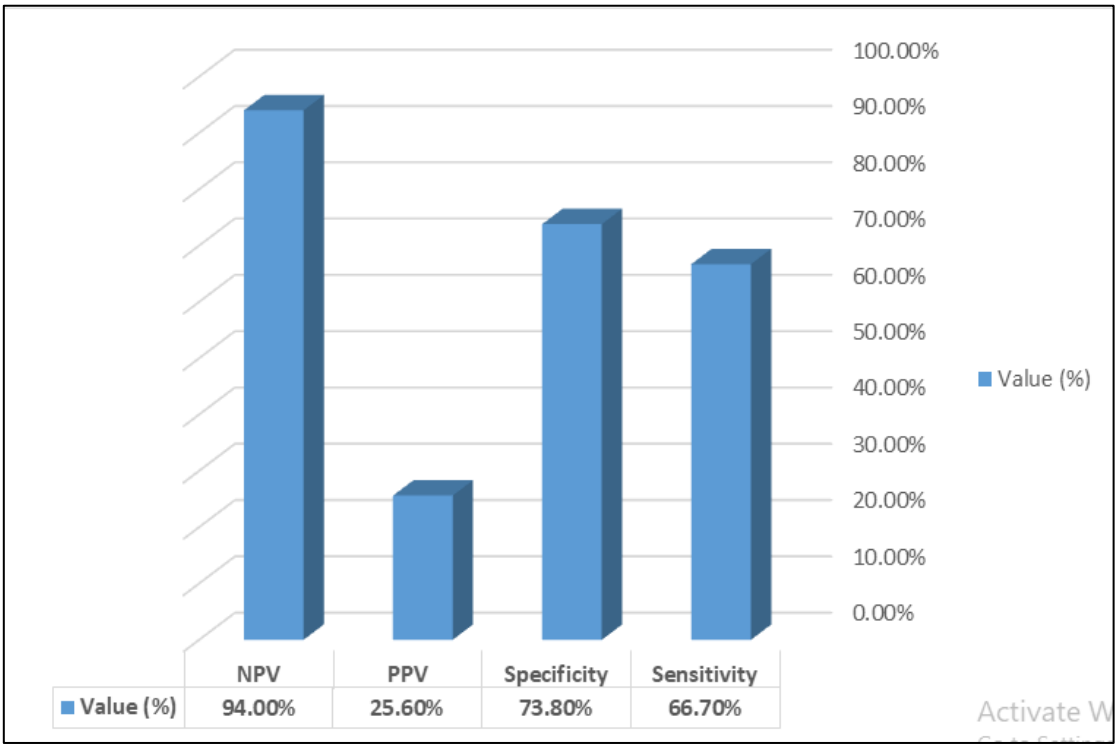

Figure 3: Assessment the sensitivity of endometrial thickness who above 10 mm in the cancer detection into women.

Table 5: Univariate analysis regression in the assessment of risk factors in endometrial cancer.

Risk Factors	OR (95% CI)	p-value
BMI ≥30	2.1 (1.3–3.4)	0.012
ET ≥10 mm	4.5 (2.1–9.8)	<0.001
Age >65 years	1.8 (1.0–3.2)	0.045

DISCUSSION

This study of 122 female patients with post-menopausal bleeding (PMB) explored the multidimensional connection between body mass index (BMI), sonographic endometrial thickness (ET), and the pathologic outcome. The mean age of the group was 62.4 years, and the mean BMI was 28.5 kg/m 2, which is indicative of an older and more overweight population. Approximately 67.2% of them were overweight or obese (BMI 25 or higher), as it was reported in a Canadian study, with obesity being one of the significant risk factors of endometrial disease. Atrophy (33.6) and benign polyps (28.7) were the most common, with hyperplasia (21.3) and cancer (12.3) coming third and fourth, respectively. Such findings are consistent with previous research and support the idea that although PMB is an indicator of malignancy, the majority of the cases are non-malignant. [Zaki, A. *et al*., 2011]

We also have evidence of the established association between high BMI and more endometrial thickness. Obese women were only

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16.2% having an ET less than 4mm, whereas 50.0% of underweight women do. On the contrary, 40.5 percent of obese women had an ET 10mm and above, which converts androgens to estrogens, giving unopposed estrogen stimulation to the endometrium. This stimulates development, increased tissue thickness, and increased susceptibility to hyperplasia and cancer. [Carugno, J. 2020]

Atrophy was highest in underweight and normal-weight women, 75.0% and 50.0%, respectively, and decreased with BMI, and was 26.7% in overweight and 21.6% in obese women. Hyperplasia and cancer were more common among the heavy women [Bhatta, S., & Sinha, A. K. 2012]. Cancer was only observed in 8.3 percent of normal-weight women as opposed to 15.6 percent and 13.5 percent of those who were overweight and obese. A univariate analysis has revealed that increasing BMI above 30 was a risk factor that had a significant contribution to endometrial cancer (OR 2.1, p = 0.012). An Italian study observed that obesity not only augments ET but it also creates a carcinogenic endometrial milieu. [Çetin, B. A. *et al*., 2017]

The usefulness of transvaginal ultrasound-based measurement of ET as a triage tool is established, but with subtle differences as revealed by our results. A sensitivity of 66.7% and specificity of 73.8% were the sensitivity of an ET of 10mm or above and specificity. Its high negative predictive value (NPV 94.0 percent) is the most useful clinically, and it has been used to support the guidelines that the low possibility of cancer is present when ET is less than 45mm. A poor positive predictive value (PPV 25.6), however, indicates that most of the women with thickened endometrium have benign conditions. All 15 cases of cancer had ET of at least 4mm, whilst the majority of women with ET of 4 to 9mm or of at least 10mm were benign. [Elgarhy, I. T., & Elboghdady, A. A. 2021]

Lastly, all 90% cancer cases (9III 10) reported in the high-risk ET 10mm or more group had a BMI of 25 or more. The thickness of the endometrium posed the risk in different ways based on metabolic conditions. In a post-menopausal woman with PMB, obesity, and ET 10mm and above, the risk of malignancy is very high compared to the same ET in a normal-weight woman. A moderate ET (49 mm) of obese women even can even be a reason to set a lower limit of a biopsy, as the change of atrophic to proliferative forms of the disease occurs. [Bosch, T. V. D. *et al*., 1996**;** Zhang, Y. *et al*., 2014]

CONCLUSION

High BMI is closely correlated with large endometrial thickness and a change of diagnosis to proliferative pathologies such as hyperplasia and cancer. In addition to this, the endometrial thickness is a good, albeit imperfect, triage factor. Although an endometrial thickness below 4 mm rules out the presence of malignancy in the majority of patients, the thickened endometrium is the most predictive factor of cancer in the presence of adiposity of patients. Most of the cancer incidences have been observed in women whose ET is higher than 10 mm, and a BMI is higher than 25.

REFERENCES

1. Mendoza, N., Sánchez-Borrego, R., Cancelo, M. J., Calvo, A., Checa, M. A., Cortés, J., ... & De La Viuda, E. "Position of the Spanish Menopause Society regarding the management of perimenopause." *Maturitas* 74.3 (2013): 283-290.
2. Campbell, K. E., Dennerstein, L., Finch, S., & Szoeke, C. E. "Impact of menopausal status on negative mood and depressive symptoms in a longitudinal sample spanning 20 years." *Menopause* 24.5 (2017): 490-496.
3. Kim, M. H., Jung-Choi, K., Ko, H., & Song, Y. M. "Educational inequality in obesity-related mortality in Korea." *Journal of Korean medical science* 32.3 (2017): 386-392.
4. Ko, S. H., & Kim, H. S. "Menopause-associated lipid metabolic disorders and foods beneficial for postmenopausal women." *Nutrients* 12.1 (2020): 202.
5. Otify, M., Fuller, J., Ross, J., Shaikh, H., & Johns, J. "Endometrial pathology in the postmenopausal woman-an evidence based approach to management." *Obstetrician & Gynaecologist* 17.1 (2015).
6. Schmandt, R. E., Iglesias, D. A., Co, N. N., & Lu, K. H. "Understanding obesity and endometrial cancer risk: opportunities for prevention." *American journal of obstetrics and gynecology* 205.6 (2011): 518-525.
7. Junnare, K. K., Desai, G. J., & Shekhawat, G. S. "Hysteroscopy: an effective tool in post-menopausal bleeding." *Int J Reprod Contracept Obstet Gynecol* 8.1 (2019): 159-164.

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8. Cho, H. J., Lee, E. S., Lee, J. Y., Hong, S. N., Ji, Y. I., Kim, H. Y., & Kim, A. "Investigations for postmenopausal uterine bleeding: special considerations for endometrial volume." *Archives of Iranian medicine* 16.11 (2013): 0-0.
9. Dawood, S. N., Farooq, A., & Alalaf, S. K. "Can vaginal ultrasound replace diagnostic curettage in the detection of endometrial pathology in post-menopausal bleeding?." *Zanco Journal of Medical Sciences (Zanco J Med Sci)* 23.2 (2019): 224-232.
10. Burbos, N., Musonda, P., Crocker, S. G., Morris, E. P., Nieto, J. J., & Duncan, T. J. "Management of postmenopausal women with vaginal bleeding when the endometrium can not be visualized." *Acta obstetricia et gynecologica Scandinavica* 91.6 (2012): 686-691.
11. Açmaz, G. Ö. K. H. A. N., Aksoy, H., Albayrak, E., Baser, M. Ü. R. Ü. V. V. E. T., Ozyurt, S., Aksoy, U., & Unal, D. "Evaluation of endometrial precancerous lesions in postmenopausal obese women-a high risk group?." *Asian Pacific Journal of Cancer Prevention* 15.1 (2014).
12. Bakour, S. H., Timmermans, A., Mol, B. W., & Khan, K. S. "Management of women with postmenopausal bleeding: evidence-based review." *Obstetrician & Gynaecologist* 14.4 (2012).
13. Wong, A. W., Lao, T. H., Cheung, C. W., Yeung, S. W., Fan, H. L., Ng, P. S., ... & Sahota, D. S. "Reappraisal of endometrial thickness for the detection of endometrial cancer in postmenopausal bleeding: a retrospective cohort study." *BJOG: An International Journal of Obstetrics & Gynaecology* 123.3 (2016): 439-446.
14. Behera, B., Mohanty, S. R., Patro, M. K., & Mishra, D. P. "Histopathological evaluation of endometrium in cases of abnormal uterine bleeding-an institutional experience in a tertiary care center." *J Evid Based Med Healthc* 7.1 (2020): 24-28.
15. Zaki, A., Gaber, A., Ghanem, E., Moemen, M., & Shehata, G. "Abdominal obesity and endometrial cancer in egyptian females with postmenopausal bleeding." *Nutrition and cancer* 63.8 (2011): 1272-1278.
16. Carugno, J. "Clinical management of vaginal bleeding in postmenopausal women." *Climacteric* 23.4 (2020): 343-349.
17. Bhatta, S., & Sinha, A. K. "Histopathological study of endometrium in abnormal uterine bleeding." *Journal of pathology of Nepal* 2.4 (2012): 297-300.
18. Çetin, B. A., Beyaz, A., Türkgeldi, L. S., Bahat, P. Y., & Köroğlu, N. "Diagnosis of endometrial pathologies: transvaginal sonography versus hysteroscopy." *International Journal of Reproduction, Contraception, Obstetrics and Gynecology* 6.2 (2017): 545.
19. Elgarhy, I. T., & Elboghdady, A. A. "Relationship between transvaginal ultrasound endometrial thickness, body mass index and endometrial pathology in women with post-menopausal bleeding." *Al-Azhar International Medical Journal* 2021.6 (2021): 33-40.
20. Bosch, T. V. D., Vandendael, A., Schoubroeck, D. V., Lombard, C. J., & Wranz, P. A. "Age, weight, body mass index and endometrial thickness in postmenopausal women." *Acta obstetricia et gynecologica Scandinavica* 75.2 (1996): 181-182.
21. Zhang, Y., Liu, H., Yang, S., Zhang, J., Qian, L., & Chen, X. "Overweight, obesity and endometrial cancer risk: results from a systematic review and meta-analysis." *The International journal of biological markers* 29.1 (2014): e21-e29.

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