

Obesity, Endogenous Hormones, and Endometrial Cancer Risk

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Abstract

Background: Endometrial disease is one of the most serious problems in the modern era. The absence of actual work, excessive body weight, and terrible food propensities are reasons behind the shifts of endogenous chemicals, leading to the danger of developing the endometrial disease. Additionally, because of epidemiological examinations, $\geq 40\%$ of this occurrence has stoutness as a significant danger factor for premenopausal just as postmenopausal ladies, making this investigation more pertinent.

Objective: This research aims to study and understand the link between endometrial cancer and obesity and its impact on the public health domain.

Materials and Methods: The survey was conducted utilizing PubMed and Google Scholar Search Engines. Poll information was gathered and anthropometric estimation digests from MEDLINE and EMBASE were evaluated. Additionally, data from a particular area based on dietary components and their impact on endometrial malignancy was collected.

Results: From the restrictive relapse examination, it has been found that expanding levels of free testosterone, estrone, total testosterone, all-out estradiol, and free estradiol are undoubtedly connected with the endometrial disease hazard among postmenopausal ladies. Androstenedione, sex chemical restricting globulin, and dehydroepiandrosterone sulfate isn't the danger factor. There were no links between serum sex chemical focuses with endometrial malignancy hazard for premenopausal ladies. However, the sample was too small to draw significant conclusions with this regard.

Discussion: Given the strong relationship between heaviness and extended endometrial threatening development risk and mortality, explaining the instruments whereby this connection happens may enrich our perception of this infection's aetiology and help make other efficient frameworks for harm expectation. There are a couple of proposed instruments whereby heaviness can incite endometrial carcinogenesis. These consolidate pathways, including endogenous sex steroid synthetics, insulin resistance, and inflammation.

Conclusion: In postmenopausal ladies, high blood centralizations of estrogens and free testosterone are related to the endometrial malignant growth hazard. Free testosterone and increased blood concentration of estrogen enhance the risk of endometrial cancer in postmenopausal women. [*Ethiop. J. Health Dev.* 2021; 35(3): 270-275]

Keywords: Obesity, Endometrial cancer, Endogenous hormone, Premenopausal, Postmenopausal, Estrogens, Testosterone, Progesterone.

Introduction

Endometrial chance is the 6th maximum typical illness in womens globally and results in significant gynaecological issues globally. This phase examines the ebb and wafts epidemiologic affirmation on the relationship among overweight, more extraordinary, endometrial illness peril, and mortality. Using weight list (BMI) as a quantity of heaviness, we discovered that electricity (characterized as BMI > 30 and 35 kg/m²) turned into related with a 4.7-wrinkle growth diverged from ordinary weight girls (BMI vital adiposity too prolonged endometrial risk threat through 1. five-to twofold. The level of endometrial infection affected people's heaviness, resulting in a maximum component twofold improvement in endometrial illness which expressed mortality. This decline was significantly associated with overweight and all-reason mortality amongst endometrial infection patients. In some investigations that estimated peril associated with a weight change, a prolonged endometrial contamination risk with weight benefit and weight biking became visible. Besides, early-existence heaviness turned into a humbly prolonged chance of endometrial risk in some unspecified time in the future

[11-13]. There are multiple gadgets wherein overweight is guessed to grow endometrial risky improvement threat, including prolonged endogenous intercourse steroid artificial substances, insulin resistance, constant infection, and adipokines. Further research needs to cognizance histological subtypes or nuclear totals of endometrial tumours and those subgroups that would be at a prolonged threat of weight-associated endometrial chance. Besides, weight benefit, setback or biking, and weight lower interventions can supply careless facts into the electrical endometrial damage association[14]. Adequate verification exists to advocate dodging electricity to lower endometrial risk damage. Endometrial ailments may be remoted into histological subtypes [3]. Type I endometrial infections are estrogen-pushed and feature an endometrioid partition, even as Type II endometrial illnesses aren't estrogen-subordinate and are classified as non-endometrioid (serous, clean mobileular, mucinous) [4]. Type I endometrial malignancies deal with about 70–80 % of all endometrial threatening developments [5]. It is more likely to have a great illustration than Type II malignancies, which are normally more

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excellent, excessive, and so on, and are associated with a much less fortunate expectancy. [6]. Endometrial contaminations were advancing, especially during the twenty-first century, wherein age-standardized recurrence estimates have increased from 6.5 consistent with 100,000 out of 2002 [7] to 8.2 compatible with 100,000 of every 2012 [1]. Moreover, Type I endometrial ailments increased within the U.S. besides in Europe [8–10]. This increased recurrence of dangerous endometrial developments can no longer be attributed to modifications in lifestyle threat factors (e.g., diet, inert lead, and usage of alternative compound treatment). It can usually be unequivocally related to endue starter infection peril [8,11].

The primary way that synthetic compounds and development faineances affect infection risk is through their managerial outcomes at the balance between mobileular enlargement, detachment, and, similarly, apoptosis [21–24]. Extended enlargement estimates increase the occurrence that modifications acquire in roto-oncogenes (which can be automatically traits at once related with the guideline of thumb of the mobileular cycle) and tumour silencer traits. The impedance of apoptosis can also additionally permit cells that have held such modifications to endure and, in the end, to expand clonally, in this manner, letting them collect extra modifications till absolute risk is reached [15]. The detachment of cells and cells' protection in a remote state is a concept to steady towards tumour headway because appreciably remoted cells have dwindled proliferative potential (22, 23). Finally, proliferative redesigns can also additionally enhance the development of installation tumours. The endometrial tissue is composed of floor epithelium, glandular, and stroma. These numerous mobileular kinds reply to intercourse steroids and various synthetics within the dispersal. They launch a mixture of development segments, cytokines, and unique peptides that pass approximately as paracrine and autocrine regulators of duplication, apoptosis, and partition.

Materials and Methods

All information was gathered via prepared questionnaires from female participants. 1452(87%) of 1670 patients were potentially qualified patients, and they took appointments from the doctors. Therefore, they got the doctors' consent. For 218 cases, the authorization was denied. Of 1452 members, 116 patients were ineligible because of failure to respond to questions. From the excess 1336 members, 64 patients were avoided as they objected to internal examinations for purposes of the study. Due to death and other contract issues, 93 patients were additionally prohibited. Finally, 825 suitable patients were selected from the remaining 1179 members, and the remaining 30% were too exhausted to even consider being contacted.

From the 3642 possible controls, 1558 were ineligible because of contact issues; some had a hysterectomy, some were excessively debilitated, and the rest were deceased. From staying in 2048 qualified controls, 854

were met, and 58% rejected (out of them, about 51% finished screening survey). Surveys comprised of inquiries on the way of life, dietary propensities, clinical history, chemical substitution treatment and oral contraceptives, family background of cancer, reproductive history, body estimations, work at home, office, and recreation.

Approved eating routine history was utilized to assess daily admission of liquor and significant food of that region's explicit eating regimen. This enabled inquiries on regular recurrence, irregularity, and standard measure of the utilization of different food sources. Patients were approached to deliver their formal admission to the one-year PR diagnosis period, while consumption was requested by the controls one year before the meeting date. stature and weight different estimations were taken by the questioners. Calorie consumption was determined for each. Detailed assessments of carotenoids occurred, and each of the 22 supplements, i.e., we reviewed all-out energy, protein, carb, total fat, saturated fat, monounsaturated fat, linoleic destructive, linolenic bad, animal fat, hard and fast dietary fibre, insoluble fibre, grain fibre, natural item fibre, vegetable fibre, supplement C, supplement E, supreme supplement A, folic destructive, b-carotene, lycopene, lutein and kryptoxanthin for the examination. With or without supplements from food sources, were log changed over and adjusted to amount to energy by Willett and Stamper's (10) strategy. Before the change to log regards, 0.01 was apportioned to 0 characteristics for supplements. A back change was made by adding the mean characteristics as a consistent, since supplements imparted as residuals, which have another scale. Full-scale energy, age (at years), body weight, age at menarche (13 or less), live births (yes/no), usage of synthetic replacement speculation (yes/no), use of oral safeguard (yes/no), school guidance (yes/no), anytime smoked (yes/no), history of diabetes (yes/no) was associated with a multivariate model.

Furthermore, a quick review procedure was used. articles on weight, endogenous synthetic compounds, and endometrial sickness risk were reviewed. Notwithstanding how there were different investigations in progress, and many appropriations are open, a firm and sound examination was required to arrive at a conclusion. We were flexible with our thinking models as we considered the broad scope of the evaluation. Conveyances going from observational to test considers and from faint composition to articles and perspectives were fused. Stata 10 Special Edition and SAS 9.4 were utilized to analyze the data mentioned above [16]. A quantifiable theoretical test is pertinent when the test estimation is chi-squared dispersed under the invalid hypothesis, unequivocally Pearson's chi-squared test, and varieties thereof [2]. The insights are arranged into completely irrelevant classes in the normal applications of this examination. Even more accurately, this test fundamentally evaluates how likely the frequencies resemble the invalid hypothesis. Advantages of this test explain its strength concerning the possible scattering of the data, its enhanced count, the comprehensive indicating of the

information that can be obtained from the test, and the flexibility in dealing with the data from both social events. Of course, one of its critical obstacles is that all individuals assessed ought to be free and self-governing. A chi-square test isn't acceptable if a component can find a way into two classes.

Furthermore, this concept isn't always appropriate for every case and results in certain blunders [6]. To reduce the error in gauge, Blunt Yates found a correction for congruity that changes the formula by removing 0.5 from the absolute differentiation between score and its ordinary motivator in a 2x2 chance table [7,29]. This results in the lessening of the chi-squared value and henceforth constructs its p-regard.

Results

Results are based on 825 anticipated certified sufferers and 854 controls. The suggested duration of sufferers and management have been 60.7 years and 60.three

years respectively. The gatherings had comparative long-time age stream classifications dispersion. Patients had better frame masses, previous age at menarche, and later age at normal menopause. Overall much less education, a significant increase in body mass since the age of twenty-two years, a significant increase in the use of hormonal replacement treatment, and an additional exceptional chance of a beyond packed with diabetes, a much lower number of pregnancies and stay conceived children (Table A) The threat of endometrial ailment enlargement in frame weight, as an instance 1.36 activities for every 10 kg enlargement in frame weight and risk turned into excessive for the women with BMI >25 as in women with a BMI of ≤25. For few women with irregular periods, matured >48, doled outage turned into equal to menopausal age and lead to lacking topics in relapse examination. It is clear that the P-value is 0.001 in large samples.

Table 1. Dispersion of Cases and Controls by Selected Risk Factors

RISK FACTOR	CATEGORY/UNIT	NUMBER OF CASES WITH RISK FACTORS (825)	NUMBER OF CONTROLS WITH RISK FACTORS (854)	P-value
Post-secondary school training	Yes No	413	474	<.001
	Yes No	329	332	<.001
At any point, smoked	13 yrs. cf<13	460	504	<.002
	No cf Yes	105	100	<.001
Age at menarche	Yes No	123	98	<.001
	>0 cf 0	695	727	<.001
Standard periods	>0 cf 0	646	790	<.002
	Yescf No	338	400	.002
Missed periods >3 months throughout everyday life	Per 1 year increase	693	680	<.001
Number of pregnancies	Per 10 kg	825	840	.02
	Per 10 kg	818	800	.02
Number of live births	>25 cf 25	585	685	<.001
	>0 cf 0	697	737	<.001
Utilized oral contraceptives	>0 cf 0	356	320	<.001
	Yes No	480	500	<.001
Age at menopause(only ladies 48 or over)	Yes No	100	50	<.001
	Per 5 yrs.	825	854	.02
Bodyweight	Per 3 yrs. use	825	854	.02
	Per 3 yrs. use	825	854	.02

cf = compared with

Dangers related to different kinds of fibre and fat were observed. Higher utilization of natural product fibre was related to an expansion in danger, while complete dietary fibre had practically no part in the danger's speed increase. The higher admission of vegetable fibre brought down the threat. Body loads were discovered to be related to the danger of endometrial malignant growth hazards. In light of the solid relationship of stoutness with endometrial malignancy, an investigation on BMI was conveyed. Ladies with a BMI of ≤25 or >25 had an expanded danger related to the total energy consumption. At the same time, vegetable admission diminished the risk independent of

BMI. For all other food varieties and supplements inspected were not inimitable across the two gatherings of BMI. A marker of a part of the metabolic irregularities profoundly linked with frame length and adiposity was discovered in this exam, particularly with regards to the changing effect of BMI on the relationship between diabetes and endometrial malignancy [13, 29]. For the maximum prevalent components, insulin in humanity with compensatory expansions in insulin secretion is developing earlier than hyperglycemia. That extended hyper discharge of insulin activates pancreatic beta mobileular brokenness with an associated lessening insulin emission [14].

According to the frame length, the extent and affectability of insulin was confirmed despite heterogeneity affiliation [15]. Likewise, a lengthy span of diabetes (>14) is now no longer linked with the endometrial malignancy hazard. This research has proven the relationship between stable institutions among chronic diseases and span [16].

Discussion

This research found that endometrial malignancy hazard expanded with weight and high admission of total energy and individual fat from this outcome. High admission of natural product fibre, chicken, and grains is fundamentally lower in expanding the danger. Intense usage of liquor, vegetable fibre, and nutrient E decreased the danger. Starches, proteins, all-out fat and significant unsaturated fats, dietary fibre, cereal fibre, insoluble fibre, nutrient C, nutrient A, folic corrosive, b-carotene, lycopene, lutein, cryptoxanthin, red meats, fish, beans, milk, cheddar, tea, and espresso were not related. Likewise, ladies with diabetes, and who were not overweight, have no expanded danger contrasted with non-overweight ladies without diabetes. There is a solid relationship between being overweight and malignant endometrial growth hazards [17]. Additionally, our examination is steady with the past discoveries, which showed the solid relationship between higher energy admissions and endometrial malignant growth hazard [18, 19, and 20]. Admission of red meat and chickens reflected the impact of individual fats; however, it neglected to do likewise if there should arise an occurrence of immersed fats, different unsaturated fats, cheeses, etc. The effect of energy consumption was shown to be more pronounced among over weight women across all BMI classifications. It was a somewhat impression of >25 BMI size gatherings. As hefty ladies have bigger stores of fat tissues and coming about expanded estrogen creation and free circling estrogen from the said source, there was a more articulated unfavourable impact on the danger of endometrial disease by excessive energy consumption. This distinction in BMI classification was not reliable with the past examination [21]. Like Potischman et al. 21, this investigation also shows that the danger is related to adiposity and that dietary variables aren't affected by the eating routine. In past examinations, the affiliation vanished after the change of BMI and other endometrial malignancy hazard factors, where liquor utilization was accounted for to be contrarily related [22]. Important attributes of diabetes, including proportions of stomach adiposity, utilization of hypoglycemic specialists, levels of endogenous insulin, and glycemic control levels, may vary among cases and controls, and that cannot be accounted for in this investigation. While deciding its connection to the hazard of endometrial cancer, this impediment makes it difficult to isolate the impacts of weight from other metabolic parts of diabetes. Estimating these boundaries where conceivable will benefit future research. Diabetes appears to provide no additional risk to women who are not overweight. Weight and diligent work are modifiable danger factors. Increasing BMI connects with circling estrogen levels on account of postmenopausal ladies. Serum chemical fixation is impacted by both caloric limitation

and the wellspring of calories [23]. In both lean and stout people, actual work reliably shows an articulated impact on chemical levels. Reverse insulin obstruction, known as deficiency of weight, whether by social changes (diet and work out) or by a medical procedure, reduces bioactive IGF-1 levels. The frequency of type 2 diabetes mellitus and other comorbidities related to heftiness is now suggested as a weight reduction objective diminished by humble weight reduction of 5-10% of body weight through diet and exercise. As a matter of fact, while the ovaries produce E2 but almost no progesterone, at some stage in the follicular time of the month to month cycle, epithelial tissue and stromal fibroblasts within the top 66% of the endometrium ("helpful" layer) duplicate (that is insinuated because the "proliferative stage" of the endometrium). Until ovulation, excessive augmentation quotes continue. By the distinctive feature of the addition in progesterone degrees, which undermines the proliferative sporting activities of E2, plasma E2 degrees display up at a all-time low and sometimes later decay swiftly at some stage in the luteal phase of the female cycle. Indication of the sturdy potential of weight manipulates and standard dynamic images for the evasion of this form of dangerous improvement, is determined from the severe diploma of endometrial infection recurrence due to extra weight, and a few affirmations of a regressive courting of endometrial illness peril with bodily activity [24]. Because its aetiology appears to be unequivocally associated with electricity and regular hyperinsulinemia, PCOS is a scary element of vital interest. To fathom the aetiology of this issue, PCOS is given a significant position. "Central" (significant tangible framework) hypothesis [25], which proposes pituitary hyper emanation of LH because of the important occasion and "ovarian" theory, which recommends that PCOS is an aftereffect of a hyper-reaction of ovarian steroidogenic proteins to steroidogenic redesigns, for instance, LH and insulin are precise theories around the pathogenesis of PCOS. Pathophysiological insulin degrees can be causally associated with risky endometrial improvement due to more than one interrelated part. Insulin may work possibly as an endometrial mitogen by increasing the proliferative consequences of insulin-like development factors [31]. Insulin may also be besides images via courting with reduced degrees of intercourse artificial confining globulin and prolonged testosterone degrees [26]. Advancement of weight supported with using sustenance and lifestyle factors can also construct the endometrial malignant boom threat. Likewise, continual hyperinsulinemia has a focal job, along with an abundance of the ovarian introduction of androgens. This Profile may also increase the risk of endometrial cancer in premenopausal women due to early progesterone deficiency. Future investigation were needed in communication with the way of life factors and with corpulence, contribute to the development of PCOS, and examine whether or not those same polymorphisms and partnerships incline to endometrial malignant growth development. Despite the fact that the amount of endometrial disease incidence between pre- and postmenopausal women must have been measured individually, this study supports past advances in this field. Extensive research has found ,

that by focusing on the abnormal hormonal traits and hyperactive proliferative pathways associated with weight, the lifetime threat of endometrial malignancy may be faded altogether. The excessive quantity of endometrial contamination recurrence is inferable from extra weight. A few affirmations for a regressive dating of endometrial disease risk using a real interest. To avoid this type of contamination, emphasise the strong functionality of weight control and true traditional artwork [10]. In overweight ladies, decreasing the weight has typically visible decay plasma insulin and increases IGFBP-1 and SHBG. In healthy women with PCOS, losing weight normalises plasma androgen levels and resulting in the restoration of the normal ovulatory cycle. Regardless of the fact that data on the long-term effects of real popular improvement on endogenous intercourse compound assimilation is limited, there is little doubt that popular real hobby will typically help prevent or lessen heftiness and insulin resistance, and thus contribute to maintaining a plasma intercourse steroid profile associated with an OK of endometrial contamination. Considering everything, affirmation shows that meals and manner of lifestyles elements leaning in the headway of weight can also increase endometrial contamination hazard to use techniques for influences on endogenous substance and development issue tiers. A critical impact in each re- and postmenopausal ladies is progressing hyperinsulinemia and an extra ovarian introduction of androgens. In Premenopausal ladies, this Profile can also increase endometrial illness hazard by introducing consistent anovulation and progesterone deficiency. In postmenopausal ladies, this Profile can also additionally grow endometrial threat improvement by developing handy estrogens. Extra epidemiological investigations have to cope with predicted interchanges among bounty weight and woman cycle abnormality and plasma androgen tiers evaluating endometrial illness threats. Further research is required to understand vital inherited redistribution elements that, in intelligence with lifestyle elements and weight, upload to the headway of PCOS and check whether or not those equal polymorphisms and coordinated efforts predispose to endometrial malignancy development. Finally, studies are depended on to measure the degree of endometrial risk recurrence in re- and postmenopausal women, which may be linked to either ovarian hyperandrogenisms or multiple units[27].

Conclusion

Further research has to spread awareness of histological subtypes or sub-nuclear totals of endometrial tumors and those subgroups who experience a prolonged threat of heaviness associated with endometrial illness. Research into weight gain, accident or biking, and weight lower intercessions can supply automatic statistics into the robustness of endometrial contamination connection. Adequate verification exists to advise heading off heaviness to reduce endometrial illness hazards.

Conflicts of interest

The maker announces that there is no contradictory situation concerning the conveyance of this paper.

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