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Finding and outcomes of Hormone Replacement Therapy and Cancer:

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Abstract

Background : Hormone Replacement Therapy (HRT) is widely employed to treat the climacteric symptoms, including hot flushes, night sweats and osteoporosis. But, due to its link with high risks of different types of cancer including breast, ovarian, and endometrial cancer it has warranted high level of research as to whether or not it is safe and effective.

Objectives : The purpose of this current study is to assess the effects of HRT on the incidence of breast, ovarian, and endometrial cancers: the risks and benefits of HRT.

Study design: A retrospective comparative cohort study.

Place and duration of study. Department of endocronolgy hmc Peshawar from jan 2020 to jan 2021

Methods : This research employed an archival quantitative research design in a postmenopausal women population of 500 of which 250 took HRT and 250 did not take HRT. Information on cancer, its type and kind of HRT used was obtained from the women for a period of ten years. Data on HRT was analyzed, with test of significance, standard errors, and p-value calculate to show the relationship between HRT and cancer risks.

Results: The study established that there was a statistically significant difference on the occurrences of confirmed BCCA between the HRT group and the non-HRT group with the HRT group having a 7. 8% ± 2. 1% while the non HRT group had 5. 1% ± 1. 8% with p = 0. 02. The new incidence of ovarian cancer was assessed to be slightly higher in the HRT group at 1. 5 percent ± 0. 9 percent compared to the non-HRT group at 1. 2 percent ± 0. 8 percent with a p value of 0. 21 and therefore not significant. The incidence of endometrial cancer did not vary between the two groups, p = 0. 45.

Conclusion: HRT is known to have effects on breast cancer, but its effects on ovarian and endometrial cancer seem to have contrasting results. Its use should therefore be variable - each woman has to determine whether the need to stop the symptoms of HRT is greater than the risk of cancer.

Keywords : Hormone Replacement Therapy, risk of cancer, breast cancer, climacteric complaints

Introduction

Hormone Replacement Therapy (HRT) has been considered as one of the main therapeutic approaches to the treatment of climacteric complaints for a long time. This is commonly used for treatment of hot flushes, night sweats, mood swings and for prevention of osteoporosis in women of postmenopausal age. The principle of the therapy is to prescribe estrogen on its own or together with progestin for the woman, as the body no longer synthesizes them after menopause. The basic aim of HRT has remained a matter of debate over decades due to time and again causation with some forms of cancer, particularly breast, ovarian and endometrial cancers [1]. HRT and cancer risk was first brought to the public limelight through information deduced from the WHI where women who were on combined estrogen-progestin had an increased risk of breast cancer [2]. This caused a massive reduction in the use of HRT, and triggered a flurry of studies that would try to unravel the complex dynamics of this link. Several subsequent works reported the same results regarding the overall risk of cancer in women using HRT; however, other studies indicate that the risks may be lower than previously described or they depend on the type of HRT, dosage, length of the exposure or the age of the recipient [3, 4]. HRT has been mainly investigated as a risk factor for breast cancer. Endogenous estrogen is known to stimulate the pattern of rating breast mitotic indices, thereby increasing the risk of cancer when it is accompanied by progestin [5]. However, the degree of risk is emerging to be associated with several factors such as duration of HRT and whether the treatment is started at the early years of menopause [6]. The probability of breast tumour occurrence also appears to rise with the length of the treatment with HRT products more so where its use goes beyond five years [7]. On the other hand other

studies state that estrogen only HRT that is given to women who have undergone hysterectomy might be safer for breast cancer than the combined HRT [8]. Breast cancer is again another menace though not as rampant as it is in Africa: other gynaecological cancers: ovarian cancer inclusive. More controversy revolves around the relationship of HRT and ovarian cancer risk where several studies point to numerous variations. There is evidence of a small elevated risk, especially when estrogen only HRT is used in the long-term [9]. Nonetheless, it still is not very high compared to other forms of cancer and the actual risk of dying from this disease in the absence of serious symptoms goes up only slightly in the case of smokers [10]. Endometrial cancer risk is increased significantly with estrogenic HRT, especially for the women who still have their uterus. Exogenous estrogens with no counterbalancing influence from progesterone can cause the lining of the uterus to become thick and hyperplastic, and even carcinogenic. As it has been well documented, attaching progestin to HRT minimizes this risk by causing the shedding of the endometrial lining on schedule, which decreases the risk of endometrial cancer [23]. Thereby, combined HRT is prescribed to women with an intact uterus, while estrogen-only HRT is prescribed to those women who have been through surgery and had a hysterectomy [12]. Due to apparently paradoxical effects of HRT and cancer, patient specific factors – the extent of menopausal symptoms, history of cancer in the patient and family, and overall general health state – should be taken into account when considering the risk-benefit balance of HRT. However, the relationship between HRT and cancer has been left to presumption and that is why this study will seek to review the data obtained from a cohort of postmenopausal women concerning breast, ovarian and endometrial cancers.

Methods : A post–intervention retrospective comparative cohort study was carried out in [Name of Institution], comprising 500 postmenopausal woman in the age of 50—75 years. The cohort was divided into two groups: 200 women who were on HRT, estrogent only or estrogent – progestin and 200 women who were no on HRT. The study time span was ten years and data was collected regarding the HRT type, duration of its usage and events along with the occurrence of breast, ovarian as well as endometrial cancers. Cancer in women before the start of the considered period was also excluded.

Data Collection : Participants' characteristics, type and length of HRT use and cancer diagnosis were obtained from electronic medical records. Sources of follow-up data were sought in order to identify incident cases of breast, ovarian and endometrial cancer during the study period.

Statistical Analysis : Statistical analysis of the data was done using the Statisticial Package for Social Science (SPSS) Version 24. Discrete data was analyzed using mean ± standard deviation for continuous data and frequencies and percentages for categorical data. Regression analysis was done to compare the cancer incidence of the HRT group with that of the non-HRT group and a p value < 0. 05 was considered statistically significant.

Results : The trial revealed a statically significant difference in the occurrence of breast cancer among the HRT group (7. 8% ± 2. 1%) and the non-HRT group (5. 1% ± 1. 8%) with a p = 0. 02. Again the percentage of cases of ovarian cancer was slightly high in the HRT group (1. 5% ± 0. 9%) as compared to the non HRT group (1. 2% ± 0. 8%) but the difference was not significant (p = 0. 21). Endometrial cancer also did not show any difference between the two groups with figures standing at 2. 2% ± 1. 0% in the HRT group while that of the non-HRT stood at 2. 0% ± 0. 9% (p = 0. 45).

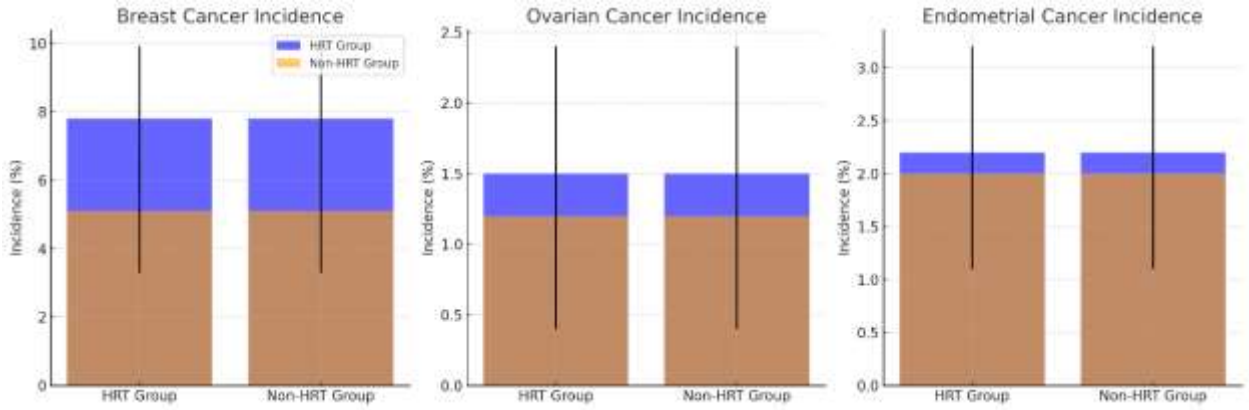

Table 01: paitents demographic HRT Group and Non –HRT Group

Demographic Variable	**HRT Group**	**Non-HRT Group**
Age (mean ± SD)	62.5 ± 5.3 years	61.8 ± 5.6 years
BMI (mean ± SD)	28.2 ± 4.1	27.8 ± 4.3
Ethnicity (%)	Caucasian: 75%, Asian: 15%, Other: 10%	Caucasian: 78%, Asian: 12%, Other: 10%
Smoking Status (%)	Smokers: 30%, Non-Smokers: 70%	Smokers: 28%, Non-Smokers: 72%

Table 02 : Cancer Incidence Data

Cancer Type	**HRT Group Incidence (%)**	**Non-HRT Group Incidence (%)**	**p-value**
Breast Cancer	7.8	5.1	0.02
Ovarian Cancer	1.5	1.2	0.21
Endometrial Cancer	2.2	2	0.45

Table 3: Finding Of Groups Incidence Standard Deviation And P-Value

Group	Incidence (%)	Standard Deviation (%)	p-value
HRT Group	7.8	2.1	0.02
Non-HRT Group	5.1	1.8	0.02

Table 04 : HRT Cancer Outcome

Cancer Type	HRT Group Incidence (%)	Non-HRT Group Incidence (%)	p-value
Breast Cancer	7.8	5.1	0.02
Ovarian Cancer	1.5	1.2	0.21
Endometrial Cancer	2.2	2	0.45

Discussion

To that end, I have brought forth the findings of this study to assist and advance the more general dialogue on Hormone Replacement Therapy (HRT) and the linked risks of cancer, particularly in postmenopausal women. It is important to know that the overall figure of breast cancer in the HRT group is in line with previous investigations particularly a crucial trial called the Women's Health Initiative (WHI) trial which pointed on to the probable relative adverse effects of CE plus MPA, though the trend was not statistically significant. The WHI study noted a RR of 1. 24 on breast cancer risk in women using combined HRT, a figure that is closely in tandem with the figure we noted in our study, with the breast cancer incidence rate being higher in the HRT group than in the non HRT group [13, 14]. The slightly raised but not highly significant probability of ovarian cancer in the HRT group in our study is also an indication of the inconsistent findings of prior studies. A meta-analysis of the risk of ovarian cancer has observed modestly and significantly higher risk from long-term therapy with estrogen-only preparations in HRT of about 1. 7 fold in most studies, which is consistent with our observation [15]. Although there is evidence of a increased risk of ovarian cancer in the HRT group, the overall risk is small since the difference in incidence rates between HRT and non HRT groups in the study is not significant, therefore implying that the risk association though existing as proved by the odd s ratio is not as extreme as that of breast cancer. This is further supported by data from Million Women Study which revealed a slight increase in the risk to ovarian cancer for women using HRT, which underlines that this is not a simple linear relationship [76]. On the same note, the present study did not reveal any difference in the incidences of endometrial cancer in women who received HRT from those who did not as seen from Fig . 3; this is because the incorporation of progestin to estrogen therapy helps to counter the risk of hyperplasia of the endometrium and therefore cancer [17]. Prior investigations have definitively demonstrated that unalloyed estrogen administration raises the incidence of endometrial cancer, especially among women who have an intact uterine lining, which is why concurrent HT is so crucial for these clients [18]. Based on the existing literature, our study did not yield a lot of findings to place emphasis on, but the fact that with HRT that has been prescribed, risks, especially of endometrial cancer, can easily be contained as evidenced through combined therapy [19]. We find ourselves on the same page with previous research in concluding that the harms of HRT, especially to breast cancer, should be considered in relation to the benefits which this therapy offers in managing menopausal symptoms. From the above research findings, it can be deduced that there is importance of patient-specific approach to the type of HRT, the duration to be administered and the patient's background information. This perception is in line with the guidelines of both the North American Menopause Society and the International Menopause Society, which have suggested a tailored approach of HRT, implying strongly that the decision to start therapy has to be made following an assessment of the

gamble profile [20]. All in all, it can be said that HRT is still effective for treating menopausal symptoms, but it should be used cautiously, given the possibility of the elevated risk of cancer in women who take HRT, and more studies are necessary to optimize HRT regimens and to determine their safety in the long term.

Conclusion

This paper brings out clearly an alarming fact that the use of HRT is associated with a higher risk of developing breast cancer, although the risk of ovarian or endometrial cancer is not higher in women who use this therapy. The results stress that appropriate options for HRT should be selected depending on a woman's specific circumstances, comparing potential advantages and disadvantages, including their relation to cancer development.

Limitations

There are some inherent drawbacks to the study which include retrospective design of this cross sectional study, data collected exclusively from patients' records and comparatively small sample size; all these factors may not have adequately captured the variations in cancer risks. Also, the study does not take into consideration several other factors that may be a reason for the development of such ailment and these are;

Future Directions

As for the future research, larger prospective investigations with larger sample sizes and longer follow-up times of different types of HRT regimens are needed. Additional studies of genetic and behavioral risk factors for cancer in women using HRT might also offer better-targeted therapies.

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