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Short Communication

The evaluation of chemotherapy and radiotherapy on thyroid gland in Sudanese cancer patients

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Abstract

This study is carried out in Khartoum state to investigate the effect of chemotherapy and radiotherapy on thyroid hormones. The patients were divided into two groups; group one patients were treated with the chemotherapy and radiotherapy for short period of time (two months) and group two patients were treated with chemotherapy and radiotherapy for long period of time (one year), to evaluate the effect of chemotherapy and radiotherapy on thyroid gland, and to study the prevalence of cancers in Sudanese patients. The results revealed no significant difference (P > 0.05) between the two groups in thyroid hormones; Triiodothyronine (T3), Thyroxine (T4) and Thyroid-stimulating hormone (TSH). Moreover, the study found that the highest prevalence of cancer was found in breast cancer 22.7%, second higher prevalence of cancer were found in oral cancer and intestine cancer 11.4%. In the meantime, the study found that women more susceptible to cancer than men 63.6% & 36.4% respectively.

Keywords: Cancer, Chemotherapy, radiotherapy,T3, T4 and TSH

INTRODUCTION

Cancer defined as unregulated cells growth. In cancer, cells divide and grow uncontrollably, forming malignant tumors, and invade nearby parts of the body (Barry et al., 2011). The cancer may also spread to more distant parts of the body through the lymphatic system or bloodstream (Giulio et al., 2011). On the other hand, benign tumors dose feature are the following, it does not grow uncontrollably, invade neighboring tissues, and spread throughout the body (Osama and Ahmed, 2012).

Cancer can be detected in a number of ways, including the presence of certain signs and symptoms, screening tests, or medical imaging. Once a possible cancer is detected it is diagnosed by microscopic examination of a tissue sample (Inga-Marie et al., 2013). Cancer is usually treated with chemotherapy, radiation therapy and surgery (Okabe et al., 2014).

Symptoms of cancer metastasis depend on the location of the tumor. When cancer begins it invariably produces no symptoms with signs and symptoms only appearing as the mass continues to grow or ulcerates. Few symptoms are specific, with many of them also frequently occurring in individuals who have other conditions.

METHODS

All patients included in this study they were suffering from cancers, in the meantime, they have had using chemotherapy and radiotherapy for cancer treatment. These patients were divided in to two groups; group one (22 patients) using the treatment for two months (short period), and the second group (22 patients) were treated from cancer for one year (long term). Blood samples were collected from each patient in the plain tube, left to coagulate, centrifuged at 1000 rpm and the supernatant (serum) were used to measure the levels of Triiodothyronine (T3), Thyroxine (T4) and thyroid-stimulating hormone (TSH). Moreover, specific question-naire was filling for each participant.

Table 1. Show the distribution of T3, T4 and TSH in short and long period of time of chemotherapy and radiotherapy.

Parameter	T3 Mean ± SD	T4 Mean ± SD	TSH Mean ± SD
Short term	114.5 ± 24.6	1.3 ± 0.5	2.17 ± 1.55
Long term	114.5 ± 24.7	1.2 ± 0.4	2.15 ± 1.50
Sig	0.6	0.2	0.2

Triiodothyronine (T3), Thyroxine (T4) and thyroid-stimulating hormone (TSH).

Table 2. Showing the age distribution in cancer patients.

Percentage	Gender		Age/ year
	Female	Male	
63.6%	18 (64.3%)	10 (62.5%)	14 - 50
36.4%	10 (35.7%),	6 (37.5%)	51 - 73
Total	28 (100%)	16 (100%)	

Table 3. Showing the distribution of cancer types in Sudanese patients

Cancer type	Frequency	Percentage
Knee	1	2.3%
Rectum	3	6.8%
Bladder	1	2.3%
Skin	4	9.1%
Leg	1	2.3%
Oral	5	11.4%
Lungs	4	9.1%
Stomach	2	4.5%
Breast	10	22.7%
Ovary	3	6.8%
Spinal cord	2	4.5%
Eye	2	4.5%
Small intestine	5	11.4%
Brain	1	2.3%
Total	44	100%

Table 4. Showing the gender between cancers patients

Gender	Frequency	Percentage
Male	16	36.4%
Female	28	63.6%
Total	44	100%

RESULTS

The results showed there is no significant different between short period of time and long period of time of chemotherapy and radiotherapy in T3, T4 and TSH ($P > 0.05$) (Table1).

Concerning the age in cancer patients in women 64.3% between 14 - 50 year and 35.7% between 51 -73, and in men 62.5% between 14 – 50 year and 37.5% between 51 - 73 year (Table 2).

The study revealed that the highest type of cancer was found the breast cancer 22.7%, the second rate high were found in oral and small intestine cancers 11.4%, followed by skin and lungs cancers 9.1% (Table 3).

The results showed that cancers more distribution between women 63.6% than men 36.4% (Table 4).

DISCUSSION

Cancer is the one of leading causes of death in the world wide and it increasing rapidly in the few last years, and that might be of many reasons such as increasing pulsation, people exposure to radiation, genetic predisposition and change of life style.

Cancer is considered the second cause of death in the world after cardiovascular disease (Muallaoglu et al., 2014). In the meantime, about 64% of the deaths in developing countries were found due to cancer (Ferlay et al., 2010).

Thyroid hormones are key regulators of metabolism in the body metabolism - as well as energy production and regulation of cell division and growth. Thyroid gland synthesizes and releases Triiodothyronine (T3) and Thyroxine (T4), which represent the only iodine-containing hormones in vertebrates.

From this study we found that the short period of time and long period of time of chemotherapy and radiotherapy none effects on thyroid hormones. Moreover, this therapy for long period of time had incurred a little reduction in TSH and T4, inspite of, that the reduction were found not significantly.

On the other hand, the study found the highest prevalence of cancer was the breast cancer; and this might be due to absence or insufficient of infrastructure and resources for routine screening mammography are often unavailable in wide area worldwide (Coughlin and Ekwueme, 2009), and particularly in Sudan, thus, breast cancers are commonly diagnosed at late stages.

The results revealed that the second prevalence of cancer type, oral cancer and intestine cancer. Moreover, the oral cancer might be due to the wide range of using snuff tobacco in Sudanese's people. In the meantime, small intestine cancer might be due to abuse of foods and drinks, That exposures to high heating for long period of time by sun before sale, beside the susceptible other pollutions and this need more investigation.

Concerning the distribution of cancer among the gender of patients, the study revealed that the women were more susceptible to cancer than male, and that might be for many reasons, one of them the abused of some cosmetics creams to change face colour or body colour in the hot country like Sudan and this also need more investigation.

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