CODEN [USA]: IAJPBB ISSN: 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES

http://doi.org/10.5281/zenodo.1412723

Available online at: http://www.iajps.com Research Article

ANALYSIS OF MICRO NUTRIENTS IN BLOOD CANCER PATIENTS AFTER RECEIVING THERAPY

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Source(s) of support in the form of grants, equipment, drugs, or all of the above: None.

Abstract:

Introduction: *Around 11 million people are diagnosed with cancer each year around the world. The most common forms of cancer include colon and rectal cancer, lung cancer and depending on sex breast or prostate cancer. By 2030 the number of cancer patients is expected to double because of demographic changes.* ***Objectives of the study:*** *This study aim to investigate the level of micronutrients in blood cancer patients after receiving different therapies at different stages.* ***Materials and methods:*** *The whole experimental work was conducted at Rural health center Satrah Sialkot and THQ hospital Noshehra Wirkan during March 2018 with the permission of ethical committee. Those blood cancer patients who receiving radiotherapy, chemotherapy and adjuvant radiotherapy were selected to study the micronutrients status in the diseased condition.* ***Results:*** *The analysis of blood micro and macro nutrients shows that there is a huge difference in control group and patients. The level of nutrients is decreases in patients as compared to control and healthy group. The low levels of nutrients shows that it leads to many deformities also. With so many things going on while battling a blood cancer, it's challenging to pay attention to nutrition.* ***Conclusion:*** *It is concluded that quality of life is very much important in brain tumor therapies. Supplementation with antioxidants during blood cancer treatments is still the subject of controversy, since the ability of radiotherapy and of some cytostatic agents to destroy tumors is based in part on the formation of free radicals.*

Key words: *Cancer, Blood, Micronutrients, Analysis*

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Please cite this article in press Umair Ahmad et al., ***Analysis of Micro Nutrients in Blood Cancer Patients after Receiving Therapy.,*** *Indo Am. J. P. Sci, 2018; 05(09).*

INTRODUCTION:

Around 11 million people are diagnosed with cancer each year around the world. The most common forms of cancer include colon and rectal cancer, lung cancer and – depending on sex – breast or prostate cancer. By 2030 the number of cancer patients is expected to double because of demographic changes. After a period of stagnation, conventional medicine has once again achieved substantial improvements in treatment outcomes in recent years, and for some tumor entities has even achieved longer survival rates [1]. These successes are due in part to new principles of medicinal treatment, and in part to improved diagnostic methods and radiation technology. At the same time, therapies have become more intense and in some cases more aggressive, and in consequence their side effects are often worse. Simultaneously, the desire of oncology patients for gentler therapeutic procedures and complementary treatments has greatly increased over the past 15 years [2]. Today, many cancer patients take vitamins and other micronutrients to augment their standard treatment or to reduce the side effects associated with the illness or its treatment. Among oncologists there are justified concerns that dietary supplements could impair the effectiveness of chemo- or radiotherapies. The use of micronutrients as complementary medical treatment must therefore always be designed and timed to avoid diminishing the effectiveness of oncological therapies [3].

Cancer is a group of diseases characterized by uncontrolled growth and spread of abnormal cells. If the spread is not controlled, it can result in death. Cancer is caused by both external factors (tobacco, infectious organisms, chemicals, and radiation) and internal factors (inherited mutations, hormones, immune conditions, and mutations that occur from metabolism). These contributory factors may act collectively or in sequence to initiate or promote carcinogenesis [4].

Cancer development is a multistage process that requires the collective action of manifold events that occur in one cell alone. Cancer treatment by radiation and anticancer drugs reduces inherent antioxidants and induces oxidative stress, which increases with disease succession. The possible causes of cancer include, damage to DNA by reactive oxygen species, which are at highest rank in the development and onset of cancer [5].

Objectives of the study

This study aim to investigate the level of micronutrients in blood cancer patients after receiving different therapies at different stages.

MATERIALS AND METHODS:

The whole experimental work was conducted at Rural health center Satrah Sialkot and THQ hospital Noshehra Wirkan during March 2018 with the permission of ethical committee. Those blood cancer patients who receiving radiotherapy, chemotherapy and adjuvant radiotherapy were selected to study the micronutrients status in the diseased condition.

Blood collection

5.0 ml blood sample was taken from vein. Blood was further processed for the estimation of MDA. Commercially available enzymatic kits of Randox were used. Blood was centrifuged at 4000 rpm for 10 minutes and serum was separated. Blood samples will be collected into EDTA tubes from fasting proteins. The blood will be centrifuged and indomethacin and butylated hydroxytoluene will be added into the plasma samples before they will be stored at -80°C until analysis**.**

Statistical analysis

Student's t-test was performed to evaluate the differences in roughness between group P and S. Two-way ANOVA was performed to study the contributions. All the data was recorded on a pro forma and analysed using SPSS-12.

RESULTS:

The analysis of blood micro and macro nutrients shows that there is a huge difference in control group and patients. The level of nutrients is decreases in patients as compared to control and healthy group. The low level of nutrients shows that it leads to many deformities also. With so many things going on while battling a blood cancer, it's challenging to pay attention to nutrition.

Table 01: Statistical analysis of micro and macro nutrients of patients and control group

Group Statistics					
	group	**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
Vit_A	control	10	1.9743	91.729355	29.007369
	patients	17	7.89106	69.624623	16.886451
Vit_C	control	10	2.41350	1.242764	.392996
	patients	17	1.06559	.386902	.093838
Vit_E	control	10	8.33150	.946245	.299229
	patients	17	2.47400	.798902	.193762
Zn	control	10	9.71250	11.703929	3.701107
	patients	16	6.16988	21.376463	5.344116
Fe	control	10	8.89530E1	3.331970	1.053661
	patients	16	9.10994E1	14.039887	3.509972
Mn	control	10	6.40500	1.709121	.540472
	patients	16	5.20250	1.391165	.347791
Se	control	10	6.55662E1	20.104143	6.357488
	patients	16	6.65813	1.943839	.485960
Cu	control	10	7.72700	3.199792	1.011863
	patients	16	8.75406E1	19.200278	4.800070

DISCUSSION:

It is the highly invasive nature of malignant brain tumors that makes them difficult to manage using most conventional therapies. Although restricted ketogenic diets can be effective in managing invasive brain cancer in children and adults, few studies have evaluated the therapeutic effect of calorie or dietary restriction on invasive brain cancer in mice [6].

Cancer patients generally have a poorer nutritional status than healthy people – indeed their provision with several vitamins and trace elements is often insufficient at the time of diagnosis and before the appearance of clinically relevant changes to the nutritional status. It deteriorates even more after starting cancer therapy [7]. However, the availability of micronutrients with antioxidant and immuno modulatory activity (e. g. vitamin C, vitamin E, beta-carotene, selenium and vitamin D) and those with a low storage or reserve capacity (e. g. B vitamins and vitamin K) [8]. Since a micronutrient deficit in cancer patients due to a tumor or therapy exacerbates the course of the disease and detracts from the efficiency of tumor destruction treatments, as well as increasing the risk of associated complications (e. g. diminished immuno competence, poor wound healing, exhaustion, depression), care should be taken to ensure an adequate intake of energy substrates (proteins, lipids, carbohydrates) and also an optimum intake of immune stabilizing micronutrients like selenium and vitamin D [9]. The importance of antioxidant micronutrients as an adjunct to nutritional therapy is substantiated by results from several studies which have shown that consuming multivitamin and mineral preparations can enhance both the quality of life and the prognosis for cancer patients. Antioxidant micronutrients like vitamin C, vitamin E, vitamin A derivatives and selenium not only act as radical scavengers, but also perform a number of other essential metabolic tasks apart from their antioxidant cell-protective functions [10]. Foremost among these are their immuno modulatory, apoptosis (cell death) inducing and cell division and differentiation regulating properties [11].

CONCLUSION:

It is concluded that quality of life is very much important in brain tumor therapies. Supplementation with antioxidants during blood cancer treatments is still the subject of controversy, since the ability of radiotherapy and of some cytostatic agents to destroy tumors is based in part on the formation of free radicals. However, the effect of most of the cytostatic agents currently used in cancer treatment, such as antimetabolites (e.g. methotrexate), nitrogen mustard derivatives (e. g. cyclophosphamide), platinum complexes (e. g. cisplatin), vinca alkaloids (e. g. vinorelbine), taxanes (e. g. paclitaxel) or anthracyclines (e. g. epirubicin) is not primarily brought about by oxidative stress. If antioxidants did have a significant influence on the ability of standard therapies to destroy tumors, consumption of fruit and vegetables rich in antioxidants and phytamin or green tea would not be allowed during the treatment phase.

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