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Effectiveness of the ayurvedic cannabis tincture in minimizing the side effect of chemotherapy induced nausea vomiting in breast cancer patient: A case report

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Abstract

CINV is the most serious side effect and the main concern for cancer patients. Its prevalence is reported between 54% and 96%. This side effect induces physiological and electrolytic dysfunctions, changes in immunity system, nutritional disruption, and even esophageal perforation. Consequently, it affects patients' quality of life and the continuance of treatment. Most patients with cancer experience CINV. The increase of excessive vagus excitation due to sympathetic inhibition is among the most important factors in the manifestation of CINV. Many factors increase the chance of CINV. The most important of them include blood pressure drop, the addition of compounds like vascular contractors, neostigmine, and opioids to anesthetics. Here is a case about 55 years old female undergone FNAC with radical mastectomy and was treated with chemotherapy for carcinoma. Medical cannabis was administered to counteract the delirious effect of chemotherapy induced nausea and vomiting.

Keywords: Ayurvedic cannabis tincture, chemotherapy induced nausea vomiting, breast cancer

Introduction

Chemotherapy-induced nausea and vomiting (CINV) remains a significant cause of morbidity in oncology patients despite the best current antiemetic prophylaxis [1]. As estimated 45-60% of patients with cancer experiences chemotherapy induced nausea and vomiting (CINV) which occurs as a result of metabolites activating neurotransmitters receptors in the GIT and brain along with chemotherapy agents.

Usually, Acute CINV occurs within 24 hours of inducing chemotherapy, delayed CINV occurs within 1-5 days after and is primarily mediated by activation of receptors in the brain [2]. Statistically delayed CINV occur more frequently than acute CINV i.e. 58.4: 34.3% respectively. Chemotherapy agents are classified as per the frequency at which they may cause CINV in patients with cancer, high risk (>90%), moderate risk (30-90%), low risk (10-30%) and minimal risk (<10%) [3].

CINV is prevented by antiemetics therapy which is not so adequate with successful rate of 59.9% in comparison to patients receiving no antiemetic therapy 50.7% [4]. These arrays of side effects have a devastating effect on the quality of life of cancer survivors. Due to the inadequacy of most of the chemo-protectors in controlling the side effects of conventional cancer therapy the complementary and alternative medicines have attracted the view of researchers and medical practitioners more recently [5]. This case study aims at providing a comprehensive management protocol of above mentioned CINV based on Ayurveda, which is an ancient system of traditional medicine practiced in Indian since 5000 BC. When the major side effects of chemotherapy are looked through an Ayurvedic perspective, it appears that they are the manifestations of aggravated *pitta dosha*, especially under the group of disorders called *Raktapitta* (hemorrhage) or *Raktadushti* (vascular inflammation) [6]. Based on comprehensive review of ancient Vedic literature and modern scientific evidences, Ayurveda based interventions are put forth. This manuscript should help clinicians and people suffering from cancer to combat serious chemo-radiotherapy related side effects through simple but effective medical cannabis remedy.

Case Report

A 55 years old postmenopausal female presented with complaints of lump in the right breast in the past 7 days, for which bilateral sonomammography was done on 26/03/2021, Which suggested of hyper dense mass lesion with irregular infiltrating margins in the central part of right breast.

FNAC of breast lump suggested of ductal carcinoma. She underwent modified radical mastectomy on 09/04/2021 under G.A., Intra-op & post-op was uneventful. Post-op she was evaluated and was referred to medical oncology OPD at Cancer Research Institute, Swami Rama Himalayan University Jolly Grant Dehradun. After evaluation of the patient and reports, she was planned for ACT (TCH) cycle for every 21 days.

Post first chemotherapy at Jolly Grant Dehradun, patient connected to Ayurvedic physician for cannabis intervention for CINV on 07/07/2021 was examined as per Ayurveda parameters.

General examination

Nadi-82/min, Regular
Mutra-4-5 times per day

Nail-pale, no clubbing
Skin-dry in nature

Mala-Not satisfactory bowel habits
Jihwa-Sama
Shabda-Prakrita
Sparsha-Ruksha
Drika-Prakrita
Aakruti- Krusha
Pallor-present (+)

Hair-brittle in nature
Agni- Mandagni
Koshtha-Krura
BP- 130/80
RR-17/min
Aakruti BSA- 1.62m²
Height- 150 cms

Patient had a co-morbidity of DMT2 and HTN for which modern medication is continued alongside chemotherapy. This is a single case study and consent was taken from the patient and study was in accordance with ICH-GCP guidelines.

Laboratory investigations

Table 1: Laboratory investigations before Ayurvedic treatment and after each cycle of Combine Chemotherapy regimen

S. No.	Objective parameters	Before Treatment 07/08/15	After 1st cycle (16/06/21)	After 2nd cycle (06/07/21)	After 3rd cycle (27/07/21)	After 4th cycle (17/08/21)	After 5th cycle (08/09/21)	After 6th cycle (30/09/21)
1.	Hb%	11.1	11.1	10.1	9.2	10.3	7.2	9.8
2.	TLC	12000	11700	9900	5400	6600	4600	6800
3.	DLC: N	60	54	61	48	45	62	50
4.	L	38	41	35	47	50	33	45
5.	E	03	03	02	03	03	03	03
6.	M	02	02	02	02	02	02	02
7.	B	00	00	00	00	00	00	00
8.	PLT	3.12	2.36	3.09	1.59	3.29	0.86	3.19
9.	RBC	5.56	5.54	5.05	4.55	4.49	3.02	3.73
10.	S. Creatinine	0.86	1.2	1.8	1.06	0.96	0.87	1.22
11.	SGPT	35.4	27.9	33	25.8	34.7	32.7	48.7
12.	S.G.O.T	36.4	25.8	39.6	22.4	24.0	35.1	36.9
13.	S. ALK. PHOSPHATASE	122	110.5	107.0	107.0	175.8	135	105.6

Timeline

The written consent for the treatment was obtained from the patient's son. The patient was given Ayurvedic treatment

with a holistic approach, i.e., Cannabis tincture along with other Ayurveda medicines followed by *Pathya-Apathya* as per classical Ayurvedic text.

Table 2: oral medication

S. No.	Date of Treatment	Medication	Mode of administration
1.	21/06/21- 05/07/21	Cannabis tincture	1 drop at night
2.	07/07/21-26/07/21	Cannabis tincture	1 drop each morning and night
3.	28/07/21-16/08/21	Cannabis tincture	1 drop morning and 2 drop night
4.	18/08/21-07/09/21	Cannabis tincture	2 drop each morning and night
5.	09/09/21-29/09/21	Cannabis tincture	2 drop each morning and night
6.	21/06/21- 30/09/21	Yashtimadhu Churna	3 g morning and night with water

Treatment

Based on the Ayurvedic principals' medical cannabis tincture was started as adjuvant symptomatic therapy for this patient [7]. Patient was given cannabis tincture in the doses mentioned in table 2, keeping in mind to stop medication on the day of chemotherapy to avoid/ minimize any adverse drug interaction along with Yashtimadhu Churna in 3 g dosage to be continued throughout the total course of chemotherapy 21/06/21- 30/09/21. (3 months, 9 days)

Observations

Oncologist told patient, after starting of inj. Paclitaxel, Inj. Carboplatin and Inj. Trastuzumab (Combine Chemotherapy medicines), diarrhea may be severe and patient will suffer from anorexia, nausea, vomiting, hair loss, skin nail bed

toxicity, hand foot syndrome etc.

During chemotherapy, after starting cannabis treatment, patient did not suffer from diarrhea, her appetite became normal and weakness gradually reduced, cramps and leg pain reduces and she retained her physical fitness and mental wellbeing. Out of 6 cycles of chemotherapy, after fourth cycle Hb% was 7.2 gm% on 16/09/21. All the cycles of chemotherapy were well tolerated by the patient and she completed the prescribed schedule of chemotherapy with least side-effects.

It is observed that side-effects of Chemotherapy are remarkable reduced with cannabis medication & patient was able to tolerate Chemotherapy. The toxicity that appeared more prominent with chemotherapy was the occurrence of neuropathic pain, which was minimal in the patient during chemotherapy.

After the completion of 6th cycle there were very encouraging results observed with negligible side effects, improvement in general health condition of the patient particularly pain which was very negligible after cannabis treatment. Chemotherapy associated adverse effects mainly lymphopenia has significant impact on the prognosis of breast cancer. But in this patient, after completion of 6th cycle of chemotherapy, Leukocyte count was within normal limit and Hb% was 9.8 gm% in spite patient was diagnosed of β -thalassemia minor trait.

By seeing good response of patient, long term treatment with regular follow ups was planned. After completion of chemotherapy, patient was exclusively on cannabis therapy. She visits for regular follow ups for 7 months without any adverse effects with good quality of life. Till last reported Patient is absolutely healthy free from any chemotherapy induced nausea and vomiting. The laboratory investigations before Ayurvedic treatment and after each cycle of chemotherapy medicine are given in table 1.

Discussion

Chemotherapy is considered an effective way to help cancer survivors but chemotherapy drugs are highly toxic and damage adjacent healthy cells. Chemotherapy medicines produce side-effects like diarrhea, loss of appetite, weakness, vomiting, constipation, fever, stomatitis, burning sensation, weight loss, alopecia, myelosuppression and affects the quality life of patients [8]. Chemotherapy drugs vitiates *Jatharagni* causes *Annavaha Srotodushti Lakshana viz Aruci, Anannabhilashanam, Chhardi* etc. The principle behind selection of cannabis regime was to restore and support functioning of gastro-intestinal system and promotes strength to patient to combat nausea and vomiting. Cannabis is considered as *grahi* (Absorbent) useful in diarrhea, *Vahni Vardhini* (improves digestion strength) hence stops nausea and vomiting, *Ruchya* (relieves anorexia) *Pachani* (digestive relieves *Ama*).

As per modern point of view, cannabis contains of 3 different bioactive molecules called flavonoids, terpenoids, and Cannabinoids [9]. Cannabis exerts its actions by binding to specific receptors called Cannabinoids receptors, making up the endogenous Cannabinoids system. These receptors, called cannabinoid receptors 1 and 2 (CB1 and CB2), work via their action as G-protein coupled receptors, where they inhibit both adenylate cyclase and calcium channels and activate inwardly rectifying potassium channels [10]. The mechanism of delayed nausea and vomiting is incompletely understood, but may involve non-serotonergic receptors including the Cannabinoids CB1 receptor, with a potential role for cannabis products in its amelioration. In toto the entourage effect of cannabis is responsible for its antiemetic effect and reduces the chemotherapy induced nausea and vomiting in cancer patients [11]. It has been proposed that THC may treat nausea via emetic reflex pathways by acting at receptors located in the nucleus tractus solitarius at the level of the area postrema. It has also been seen that THC reverses the effects of 5-HT₃ receptor agonists, which normally induce vomiting [12].

Conclusion

The case study concluded that, cannabis regimen is an effective adjuvant therapy in protecting the patient from the adverse effect of chemotherapy induced nausea and vomiting. This Ayurvedic medication certainly improves the

strength of patient, quality of life of the cancer patient, and may enhance the life expectancy. This is a single case study; thus, further randomized controlled clinical trials are warranted to develop new strategies in chemotherapy induced nausea and vomiting management.

Declaration of patient consent

Authors certify that they have obtained patient consent form, where the patient/caregiver has given her consent for reporting the case along with the images and other clinical information in the journal. The patient/caregiver understands that his/her name and initials will not be published and due efforts will be made to conceal her identity, but anonymity cannot be guaranteed.

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Conflict of interest

There are no conflicts of interest

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