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***THE EFFECT OF CARRAGEENAN ON THE ORAL
MANIFESTATIONS, IMMUNOLOGICAL
MARKERS IN LYMPHOMA PATIENTS UNDER
CHEMOTHERAPY***

A thesis

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Abstract

Background:

Carrageenan is a sulfated polyglycan that is extracted from red seaweed of the genera *Chondrus*, *Eucheuma*, *Gigartina* and *Iridaea*. It is mainly used as food additive due to its gelling, thickening and emulsifying properties making it a vegetarian alternative for gelatin, in addition Carrageenan is widely used as excipient in personal lubricants, cosmetics, toothpaste and pharmaceutical products, oral healthcare products due to its bioactive compounds. There are three types of carrageenan available being hydrocolloid in nature (iota, kappa, and lambda), which differ in composition and degree of sulfation in polymeric structure.

A malignant lymphocytes that accumulate in lymph nodes caused group of diseases called Lymphomas with its characteristics lymphadenopathy. These may pelt over into blood or infiltrate organs outside the lymphoid tissue. The main subdivision of lymphomas is into Hodgkin's lymphoma and non-Hodgkin's lymphoma and this is based on the histologic presence of Reed-Sternberg cells in Hodgkin's lymphoma.

Aims of the study: The present study will be designated..

To determine the oral manifestations after application of carrageenan in patients with Hodgkin's & Non-Hodgkin's lymphoma receiving chemotherapy and to determine the effect of topical carrageenan on the levels of salivary immunoglobulin A, interleukin-6 and tumor necrosis factor- α in Hodgkin's & non-Hodgkin's lymphoma patients.

Subjects, materials and methods:

The study samples consisted of (25) Hodgkin & Non-Hodgkin lymphoma patients (12 male and 13 female).

All the Hodgkin's lymphoma patients was diagnosed by Hematologists in the oncology unit of (Imamein Kadhimein Medical City). confirmed as Hodgkin by histological examination of an excised lymphnode, Using ABVD Regimen,(adriamycin, bleomycin, vinblastine and dacarbazine) cyclical chemotherapy.

Non- Hodgkin's lymphoma patients selectors (B cell type) diagnosed as Non-Hodgkin by lymph node biopsy or strucut biopsy of lymph node or other involved tissue e.g.bone marrow or extra nodal tissue morphological examination is assisted by immunophenotypic and,in some cases,genetic analysis for B-cell lymphomas,expression of either κ or λ light chains confirms clonality distinguishes the disease from a reactive node.

Using R-CHOP Regimen {rituximab in combination with cyclophosphomide, hyroxodaunorubicin, vincristine (Oncovin) and prednisolone} chemotherapy combination.

Whole unstimulated saliva was collected to determine the level of salivary immunological markers which measured by Enzyme Link Immunosorbent Assay.Those patients were examined to detect the presence of oral manifestations and to evaluate the level of salivary markers (secretory immunoglobulin A, Interleukin-6 and tumor necrosis factor- α) of age range (20-70) years.Taking saliva at three times interval:

- 1- at the time of oral diagnosis on patient under chemotherapy.
- 2- after one week(without carrageenan) and instruct to use carrageenan.
- 3- then after one week(with carrageenan).

Results:

The oral manifestations was in Non-Hodgkin's lymphoma patients (64%) and in Hodgkin's lymphoma patients (36%)taste alteration , followed by burning mouth syndrome, dry mouth and lastly candidiasis with significant differences after application of carrageenan at $p < 0.05$

The levels of salivary immunoglobulin A, interleukin-6 and tumor necrosis factor- α were slightly decreased but showed no significant differences after carrageenan application.

Conclusions:

The carrageenan effects on oral lesion may allow the use of κ – carrageenan as a base or primary compound in dental practice besides the other compounds like chlorhexidine. The most frequent oral manifestations in Lymphoma patients was taste alteration followed by burning mouth syndrome , dry mouth ,candidiasis and male patients affected more than females which increased during treatment with chemotherapy .The salivary immunological markers level slightly decreased in lymphoma patients after receiving carrageenan which indicate that there is no absorption from oral mucosa...