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ASSESSMENT OF DEPRESSION IN HEAD AND NECK CANCER PATIENTS UNDERGOING RADIOTHERAPY TREATMENT- AN EXPERIENCE AT TERTIARY CARE CENTRE

Oncology/Radiotherapy

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ABSTRACT

Objective: The aim of the study was to assess symptoms of depression and anxiety in patients with head and neck cancer during radiotherapy treatment. **Material And Methods:** A prospective observational study of consecutive head and neck patients was conducted at a tertiary cancer center (n = 200, 125 male and 75 female). Eligibility included the diagnosis of cancer in the head and neck region, where the patient agreed to radiotherapy administered with definitive or postoperative intent. The median total dose was 6,600 cGy (range 6,000–7,200 cGy). Symptoms of depression and anxiety were assessed by the Hamilton Depression Rating Scale (HAM-D) in cancer patients receiving radiotherapy at the Department of Radiotherapy, ATRCTRI, SP Medical College and attached group of PBM hospitals, Bikaner, (Rajasthan) from 1 March 2023 to 31 November 2023, who were above 18 years of age, and could read, understand, and write, were selected. All patients completed the HAMD scale before the start of radiotherapy, on the 6th and 11th fraction, on the last day of radiotherapy, and at the first follow-up visit. Radiotherapy treatment was not withdrawn in between assessment and continued till the complete dose. The effect of patient, tumor, and treatment-related factors on psychosocial distress was analyzed. Association of depression with various factors like name, age, sex, residence, education, occupation and income, marital status, history of another co-morbid disease, type, and site of cancer, presence of metastases, number of chemotherapy cycles taken, source of cost of therapy, was also computed. **Results:** The prevalence of mild to severe depression was present in 58% (116) patients using the HAMD scale. The variables that were significantly associated with extremes the age (age > 55 and 30-55 years) (P = 0.01), postoperative status (P-value = 0.001), less than 2 chemotherapy cycles, cost of treatment, un-secure employment and receiving more than 10 fraction cycles of radiotherapy (p-value = 0.003). No significant association was seen between depression and gender, performance status, presence of co-existing disease, and distant metastases. **Conclusion:** The results of our study have shown that an alarming number of patients undergoing radiotherapy for head and neck cancer have symptoms suggestive of psychosocial distress most commonly depression. The HAMD scale is an easy and reliable method to measure depression. Depression was present in 58% of patients in our study. This proportion increases significantly during radiotherapy. Studies investigating the role of antidepressants and/or psychiatric counseling might be warranted in the future.

KEYWORDS

The HAMD scale, Head and Neck Cancer, Radiotherapy, Depression

INTRODUCTION:

Head and neck malignancies are the seventh most common malignancies, worldwide and second most common in India (first most common in males while fourth most common in females[1] Cancer of the head and neck is common. Both the disease and its treatment are associated with considerable psychological distress.[2]

Patients with head and neck cancer (HNC) may suffer variable degrees of functional impairment that are related to speaking, swallowing, breathing, taste, and smell, as well as facial disfigurement during treatment and in the illness course. They are at higher risk of having emotional distress than any other form of cancer amid the loss of these functions. [3]

Emotional disorders might be expected after a diagnosis of cancer and going through a period of enduring adaptation to the illness from weeks to months.

In the ICD-11, a depressive episode is defined by the concurrent presence of at least five out of a list of ten symptoms, which must occur most of the day, nearly every day, for at least 2 weeks. One of these symptoms must be a depressed mood or markedly diminished interest or pleasure in activities. The mood disturbance must result in significant functional impairment and not be a manifestation of another health condition, due to the effects of a substance or medication, or better accounted for by bereavement.

The ten symptoms are depressed mood, markedly diminished interest or pleasure in activities, reduced ability to concentrate and sustain attention or marked indecisiveness, beliefs of low self-worth or excessive or inappropriate guilt, hopelessness about the future, recurrent thoughts of death or suicidal ideation or evidence of attempted suicide, significantly disrupted sleep or excessive sleep, significant changes in appetite or weight, psychomotor agitation or retardation, and reduced energy or fatigue. The list includes one symptom (hopelessness) that is not present in the DSM-5 criteria for major depression, but which was found to perform more strongly than approximately half of the DSM symptoms in differentiating depressive from non-depressive subjects. [4]

Cancer patients usually have various psychological complications in the form of adjustment disorder, depressed mood, anxiety, impoverished life satisfaction, or loss of self-esteem, with depression being the most common among them Depression begins as soon as the diagnosis of cancer is confirmed. [5] The causes of depression are many like various myths and misconceptions about cancer treatment and outcome, battery of investigations the patient is required to undergo, multiple referrals, repeated hospitalization, concern about the loss of organs in case of surgery or side effects in case of chemo/radiotherapy, long course of treatment, etc.

Katon et al. have described a bidirectional relationship between depression and chronic medical disorders. The adverse health risk behaviors and psychobiological changes associated with depression increase the risk for chronic medical disorders, and biological changes and complications associated with chronic medical disorders may

precipitate depressive episodes. [6] Depression not only causes great suffering to the patient but also puts a psychological and financial burden on the family.

Co-morbid depression is associated with increased medical symptom burden, functional impairment, medical costs, poor adherence to self-care regimens, and increased risk of morbidity and mortality in patients with chronic medical disorders; ultimately worsening the course of medical disorders.

Depression in cancer patients causes several difficulties in compliance with the prescribed treatment within the scheduled time, which may ultimately affect outcomes and lead to increased morbidity and mortality.

So determining the magnitude of depression and various factors associated with it is of utmost importance to initiate the timely intervention, which may be either counseling, psychotherapy, anti-depressive medication, or even alternative/complementary medicine like yoga and meditation. There is also a need to know the point of appropriate referral of such patients to a psychiatrist. As far as Indian data is concerned, very limited literature is available tackling this situation; which necessitated the present study to be carried out.

MATERIAL AND METHODS:

The present study is a cross-sectional descriptive type of study conducted at the Department of Radiotherapy, ATRCTRI, SP Medical College and attached group of PBM hospitals, Bikaner, (Rajasthan) India from 1 March 2023 to 31 November 2023 (both days included). The objectives of the present study were to determine the magnitude of depression in cancer patients receiving radiotherapy and various factors associated with it. Among the cancer patients who received radiotherapy during the study period, those who were above 18 years of age, and could read, understand, and write, were selected. Those who were unable to communicate and those who refused to give consent for the study were excluded. A total of 211 patients were included in our study, 7 of them refused to participate and 4 were left out. After that, a study was done on 200 patients (male 125 and female 75). Of the 200 patients, 64 were treated with definitive RT, and 136 underwent RT after surgery. 174 patients out of 200, received platinum-based concurrent chemotherapy. The median total dose was 6,600 cGy (range 6,000–7,200 cGy). The median duration of radiotherapy treatment was 52 days (range, 42–67 days). All patients completed the HAMD scale before the start of radiotherapy, on the 6th and 11th fraction, on the last day of radiotherapy, and at the first follow-up visit. The effect of patient, tumor, and treatment-related factors on psychosocial distress was analyzed. The patients were given a two paged questionnaire; the first page consisted of basic information, like name, age, gender, contact details, education and occupation details, history of another co-morbid disease, type, and site of cancer, presence of metastases, number of chemotherapy cycle administered, number of radiotherapy fractions going on and finance of cost of therapy. The inclusion of items in the questionnaire was based on the available literature as predictors for depression. In the end, was the consent regarding the use of the information provided for research purposes, to be signed by the subject. The second page consisted of the Hamilton Depression Rating *Scale (HAM-D)* to screen and measure depression.

The Hamilton Depression Rating Scale (HAM-D or HDRS) is the most commonly used instrument for **assessing symptoms of depression**. It has been used in many key studies of depression and its treatment.

The Hamilton Depression Rating Scale (HAM-D, HRSD, or HDRS) is a 21-item clinician-administered multiple-choice measure of depression symptom severity. The first 17 of the 21 items contribute to the total score (Hamilton, 1960) and items 18–21 give additional information not part of the scale, such as paranoia and diurnal variation (Hedlund & Vieweg, 1979). Symptoms are defined by anchor point descriptions (ranging from 3 to 5 possible responses), which increase in severity. Clinicians consider the intensity and frequency of symptoms based on patient response and observations.

The HAM-D was first published in 1960 and reviewed subsequently (Hamilton, 1964, 1980). Scoring is based on the 17-item scale and scores of **0–7** are considered as being normal, 8–16 suggest mild depression, 17–23 moderate depression, and scores over 24 are indicative of severe depression, the maximum score being 52 on the 17-point scale. [7]

While using the HAMD questionnaire, patients were asked to suggest the answer, among the available options for each question, based on how they felt in the previous month. The options for each question were interpreted by the patients to obtain the most accurate answer. The expected time to fill out the HAMD questionnaire is about 10 minutes. Subjects were told to deposit the filled-in forms in a drop-box placed in the waiting area of the tertiary cancer care center. The filled-in forms were collected twice a week.

After collecting all the forms, all data were entered in Microsoft Excel for Windows. The presence of depression was evaluated based on The HAMD score, with a score of 8 or above indicating depression. Incomplete forms, or forms without sign of the subject on the consent, were rejected. A total of two hundred were found eligible for analysis. Statistical analysis was performed using Statistical Package for Social Sciences (SPSS) trial version 20.0 (IBM Corp., Armonk, New York, USA) using logistic regression analysis, considering the presence of depression as 1 and absence as 0. In all calculations, the significance level was taken as 0.05.

RESULTS

The baseline patient and tumor characteristics are shown in Table 1. About two-thirds of the patients were male, above 55 years of age, paid for the treatment, receiving less than 2 cycles of chemotherapy, and receiving more than 10 fractions of radiotherapy (figure no 1). About half of the patients were doing private (unsecured) jobs with Eastern Cooperative Oncology Group Performance Status (ECOG PS) 0-2. Less than a quarter of the patients had other co-morbid diseases or metastases. The statistical analysis of various parameters associated with depression is shown in Table 2. Statistically significant association of depression was found with extremes of age (age >55 and 30-55 years), cost of treatment (being higher with paid versus free treatment), post-operative status (comparatively being higher with post-surgery), employement with un-secure job (figure no 2), receiving more than 10 fractions of radiotherapy and 2 number of chemotherapy cycle (being higher with concurrent platinum-based chemotherapy). No significant association was seen with gender, ECOG PS, and the presence of co-existing disease and metastases.

DISCUSSION:-

Head and neck cancers (HNC) are malignancies arising from the base of the skull to the thoracic inlet. The quality of life in these patients is poor as they suffer from socially awkward conditions. As **Anderson G et al**. state the mainstay of treatment for locoregionally advanced head and neck squamous cell carcinoma (HNSCC) is either surgery followed by adjuvant radiation therapy or definitive concurrent chemoradiation (CRT) reserving surgery as salvage therapy, referred to as the organ-preservation approach.[8] Radiotherapy is the main non-surgical treatment for many head and neck which is employed as a primary treatment or as an adjuvant to surgery.[9] So disease itself and its treatment are associated with marked psychological symptoms. **Lydiatt WM et.al** studied that head and neck cancer patients experience among the highest rates of major depressive disorder of all oncology patients with an incidence of 15-50%.[10]

Depression at the end of life is a common mental health issue with serious implications for quality of life and end-of-life decision-making. Depression decreases patients' quality of life, including both physical functioning and overall psychological well-being. Depression can fuel a desire for hastened death and decisions to withdraw or refuse potentially life-extending medical treatments. Various studies have used different scales to measure the magnitude of depression in cancer patients.

Allen M Chen et al. study has shown that an alarming number of patients undergoing radiotherapy for head and neck cancer have symptoms suggestive of psychosocial distress even before beginning treatment. This proportion increases significantly during radiotherapy. According to the study, the prevalence of mild to severe pre-RT depression was 58% and 45% using the Hospital Anxiety and Depression Scale-D and Beck Depression Inventory-II scale, respectively. The prevalence of severe pre-RT anxiety was 7%. The variables that were significantly associated with post-RT depression included a greater pre-RT depression level, employment status (working at enrollment), younger age (<55 years), single marital status, and living alone ($p < 0.05$, for all).[11]

Kate Neilson et al. studied that the rate of depression in head and neck cancer patients increases following cancer treatment and is related to

tumor/treatment-related physical symptoms. Anxiety levels are higher pre-treatment, and lower immediately following cancer treatment but rise to near pre-treatment levels more than a year after completion of cancer treatment. The prevalence of identified probable cases of depression was 15% at baseline, increasing to 29% 3 weeks post-treatment, falling to 8% at 18-month follow-up. The number of probable cases of anxiety was 20% at baseline, 17% at 3 weeks post-treatment, and 22% at 18-month follow-up. Depression scores significantly increased from baseline to 3 weeks post-treatment and decreased at 18-month follow-up. [12]

This study sought to examine these head and neck cancer patients during their radiotherapy treatment, through the investigation of one of the most commonly used observer-rated measures of depression, the Hamilton Depression Rating Scale. The HAMD scale is an easy and reliable method to measure depression.

Table -1 The Baseline Patient And Tumor Characteristics

S. No	Parameter		Numbers	%
1.	AGE	30<	8	4
		30-55	69	34.5
		>55	123	61.5
2.	GENDER	M	130	65
		F	70	35
3.	OCCUPATION	Un-employed	101	50.5
		Employed Secure Job	86	43
		Employed Un-secure Job	13	6.5
4.	TREATMENT COST	FREE	138	69
		PAID	62	31
5.	COEXISTING MORBIDITY	PRESENT	20	10
		ABSENT	180	90
6.	ECOG PS	0-2	160	80
		3-4	40	20
7.	RADIOTHERAPY FRACTIONS	<6	31	15.5
		6-10	78	39
		>11	89	44.5
8.	SURGERY TREATMENT FOR PRIMARY	YES	136	68
		NO	64	32
9	CHEMOTHERAPY CYCLE (before radiotherapy)	<2	17	8.5
		2-4	97	48.5
		>4	86	43
10.	PLATINUM-BASED CONCURRENT CHEMOTHERAPY	YES	174	87
		NO	26	13
ECOG PS -Eastern Cooperative Oncology Group Performance Status				

Table -2 The Statistical Analysis Of Various Parameters Associated With Depression

S. No	Parameters		Entire Cohart n (%)	Depression n (%)	Odds Ratio (95% CI)	P- Value
1.	AGE	<30	8**(4%)**	5**(40%)**	0.93 (0.21-4.03)	0.93 NS
		30-55	69**(34.5%)**	36**(52.17%)**	0.46(0.24-0.85)	0.01 S
		>55	123**(61.5%)**	87**(70.73%)**	2.12(1.17-3.83)	0.01 S
2.	GENDER	M	130**(65%)**	78**(60%)**	0.64(0.34-1.19)	0.16 NS
		F	70**(35%)**	49**(70%)**	1.55(0.83-2.89)	0.16 NS
3.	OCCUPATION	UN-EMPLOYED	101**(50.5%)**	63**(62.38%)**	1.22(0.69-2.15)	0.48 NS
		EMPLOYED SECURE JOB	86**(43%)**	49**(56.98%)**	0.80(0.45-01.42)	0.76 NS
		EMPLOYED UN-SECURE JOB	13**(6.5%)**	8**(61.54%)**	0.005(0.001-0.015)	<0.01 HS
4.	TREATMENT COST	FREE	183**(91.5%)**	135**(73.77%)**	1.96(0.71-5.46)	0.19 NS
		PAID	17**(8.5%)**	10**(58.82%)**	0.51(0.18-1.41)	0.19 NS
5.	COEXISTING MORBIDITY	PRESENT	20**(10%)**	13**(65%)**	1.32(0.50-3.48)	0.56 NS
		ABSENT	180**(90%)**	105**(58.33%)**	0.75(0.28-1.97)	0.56 NS
6.	ECOG PS	0-2	160**(80%)**	125**(78.13%)**	1.35(0.61-2.98)	0.75 NS
		3-4	40**(20%)**	29**(72.5%)**	0.74(0.33-1.62)	0.45 NS
7.	RADIOTHERAPY FRACTIONS	<6 fractions	31**(15.5%)**	5**(16.13%)**	0.42(0.15-1.16)	0.09 NS
		6-10	78**(39%)**	17**(21.79%)**	0.55(0.28-1.07)	0.08 NS
		>11	89**(44.5%)**	35**(39.33%)**	2.56(1.36-4.82)	0.003 HS
8.	SURGERY TREATMENT FOR PRIMARY	YES	136**(68%)**	106**(77.94%)**	2.92(1.54-5.53)	0.001 HS
		NO	64**(32%)**	35**(54.69%)**	0.34(0.18-0.64)	0.001 HS
9.	CHEMOTHERAPY CYCLE (before radiotherapy)	<2	19**(9.5%)**	13**(68.42%)**	1.53(0.55-4.20)	0.41 NS
		2-4	156**(78%)**	94**(60.26%)**	1.14(0.57-2.26)	0.71 NS
		>4	23**(11.5%)**	11**(47.83%)**	0.58(0.24-1.39)	0.22 NS
10.	PLATINUM-BASED CONCURRENT CHEMOTHERAPY	YES	174**(87%)**	93**(53.45%)**	3.11(1.24-7.79)	0.01 S
		NO	26**(13%)**	7**(26.92%)**	0.32(0.12-0.80)	0.01 S
ECOG PS -Eastern Cooperative Oncology Group Performance Status						

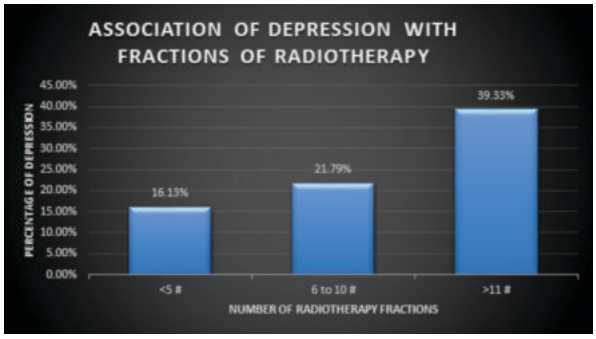

Figure 1: Showing Association Depression With Fractions Among Patients Who Is Undergoing Radiotherapy For Head And Neck Cancer.

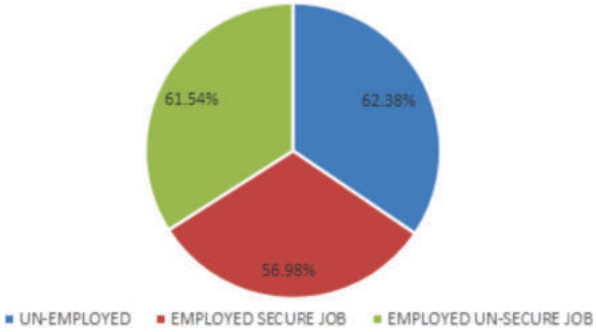

Figure 2: Association depression with ocupation among patients who is undergoing radiotherapy for head and neck cancer

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