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RESEARCH ARTICLE

INCIDENCE AND CAUSES OF HOSPITALIZATION AMONG HEAD AND NECK CANCER PATIENTS TREATED IN THE RADIOTHERAPY DEPARTMENT

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Abstract

Many patients with primary head and neck cancer (HNC) are treated with non-surgical techniques, primarily radiotherapy (RT) with or without concurrent chemotherapy. Although these treatments have improved overall survival, they can cause significant toxicities leading to hospitalization. This retrospective study analyzed 69 patients with otorhinolaryngological (ORL) cancers hospitalized in the Radiotherapy Department of the National Institute of Oncology, Rabat, between March 2022 and March 2024. The majority were male (60%) with a mean age of 50.5 years. Tumor sites included the nasopharynx (50%), oral cavity (20%), and larynx (13%). Common risk factors were smoking (37.5%) and alcohol consumption (17%). The main reasons for hospitalization were malnutrition secondary to dysphagia (56%) and radiotherapy related toxicities such as radiomucositis and radiodermatit is. Patient management included parenteral nutrition (50%), PEG tube placement (10%), transfusions (13%), and supportive care for pain, hydration, corticosteroid therapy, and infections. The mean hospital stay was 15 days.

Introduction:-

Many patients with primary head and neck cancer (HNC) are treated with non-surgical techniques, primarily radiotherapy (RT) with or without concurrent chemotherapy. The current standard treatment for patients with locally advanced head and neck cancer (HNC) is concurrent chemoradiotherapy (CRT) [1 2]. Although this treatment has improved overall survival, its use in HNC leads to significant clinical toxicitie [3 4], such as mucositis, nausea, vomiting, dehydration, malnutrition, and others, which may result in eventual hospitalization [5] .An analysis of 33 studies conducted by Trotti and colleagues showed that gastrointestinal mucositis is the most debilitating toxicity, with an overall incidence of 80%, and it caused hospitalization in 16% of patients [3]. Hospital stays often lead to prolonged treatment interruptions, which have been shown to negatively impact local disease control. [6] Thus, severe toxicities not only affect the general health and quality of life of patients but can also compromise the effectiveness of treatment.Furthermore, hospitalizations due to toxicity impose a significant economic burden on the healthcare system. A study by Nonzee on the costs of supportive care associated with toxicity induced by chemoradiotherapy revealed that the median additional cost related to this toxicity was $17,244 per patient who developed severe mucositis/pharyngitis. More significantly, the majority of this cost increase was attributed to

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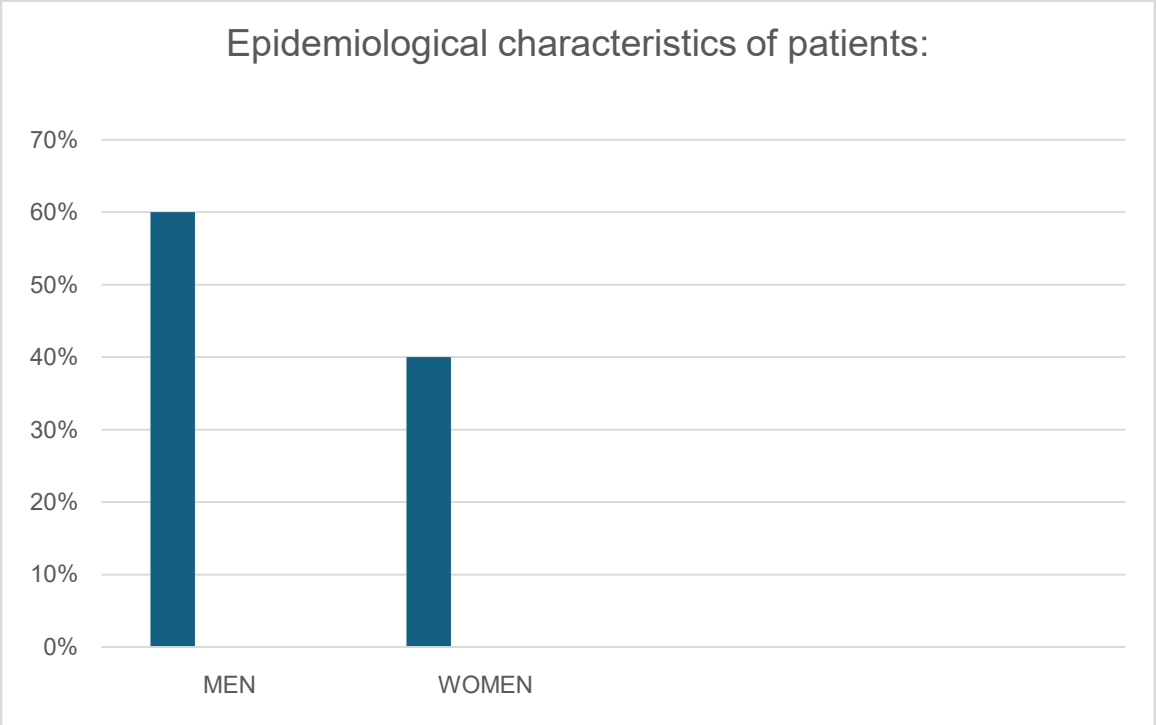
hospital stays [7] .Thus, a study of the clinical factors that may predict hospitalizations related to toxicity could be beneficial for patients and provide a means to control healthcare costs by implementing strategies to minimize these events. In this study aims to assess the incidence and causes of hospitalization among HNC patients treated with radiotherapy and to identify clinical and treatment-related factors associated with hospitalization."

Materials and Methods:-

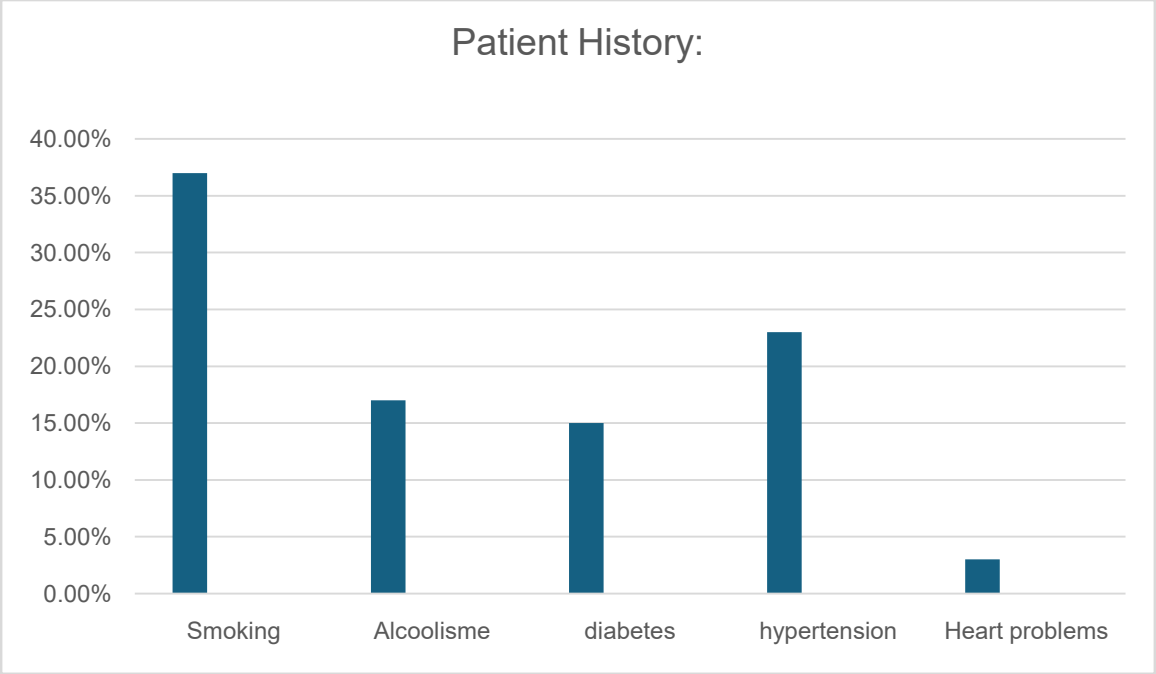
A retrospective analysis was conducted on 69 patients with histologically confirmed ORL cancer, treated with intensity-modulated radiation therapy (IMRT) for curative treatment, with or without concurrent chemotherapy, between 03/2022 and 03/2024.Patients were hospitalized due to treatment toxicities, even several months after the completion of treatment.The clinical parameters recorded included age at the time of treatment, sex, primary tumor site, comorbidities (including pulmonary diseases, cardiac conditions such as coronary artery disease, myocardial infarction, or heart failure, history of deep vein thrombosis or pulmonary embolism, diabetes, hypertension, and chronic kidney disease), and patient history (such as smoking and alcoholism).Treatment factors recorded included the use of either radiotherapy alone or concurrent chemoradiotherapy.Data was entered, coded, and analyzed in an Excel file.

Results:-

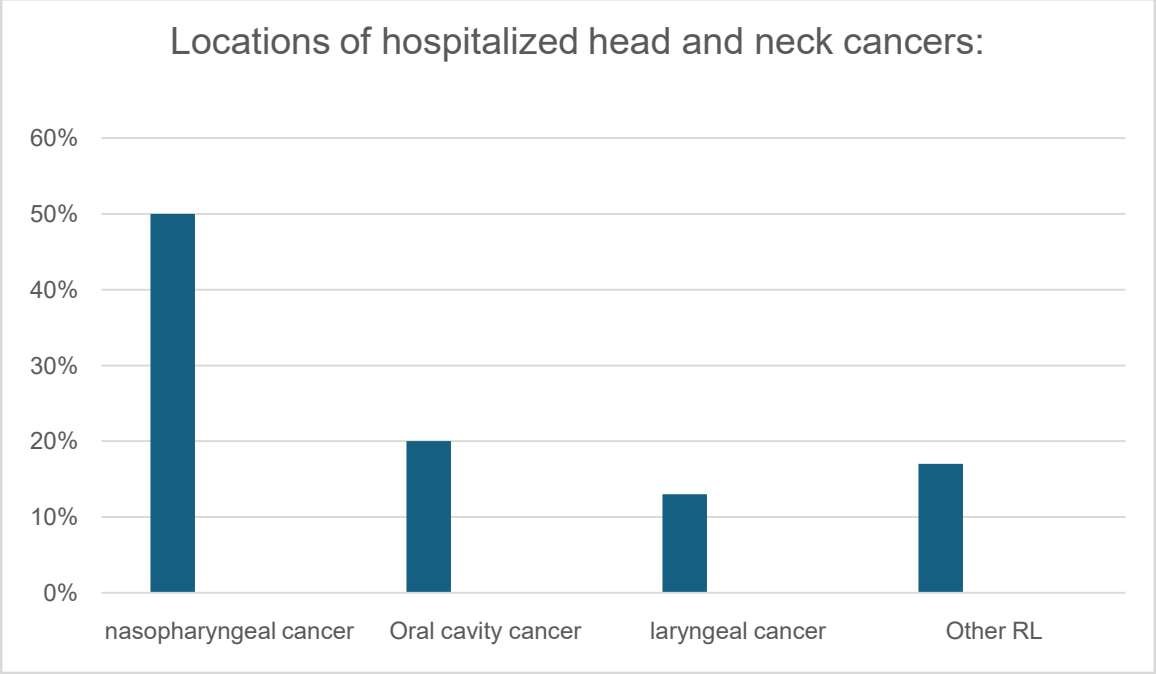
During this period, we collected 69 cases of ORL cancer. The age of these patients ranged from 19 to 78 years, with a mean age of 50.5 years. Our study shows a slight male predominance of 60%



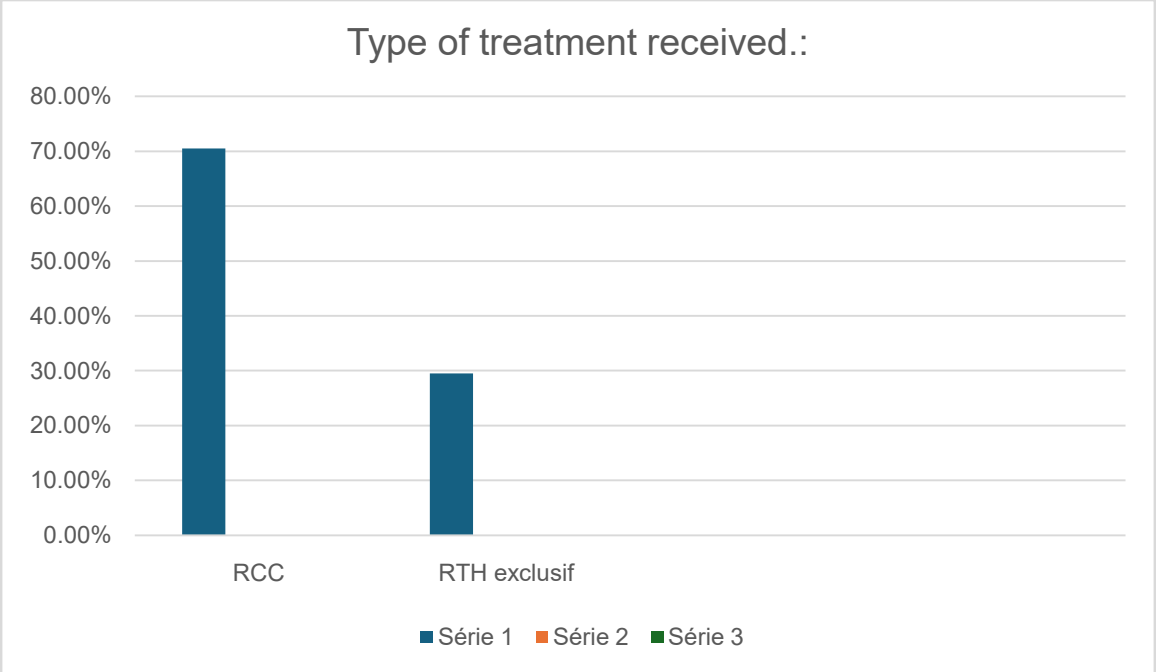
The majority of patients had no significant medical history: chronic smoking in 37.5% of patients; alcoholism in 17% of patients; diabetes in 15% of patients; hypertension in 23% of patients; and heart problems in 3% of patients.



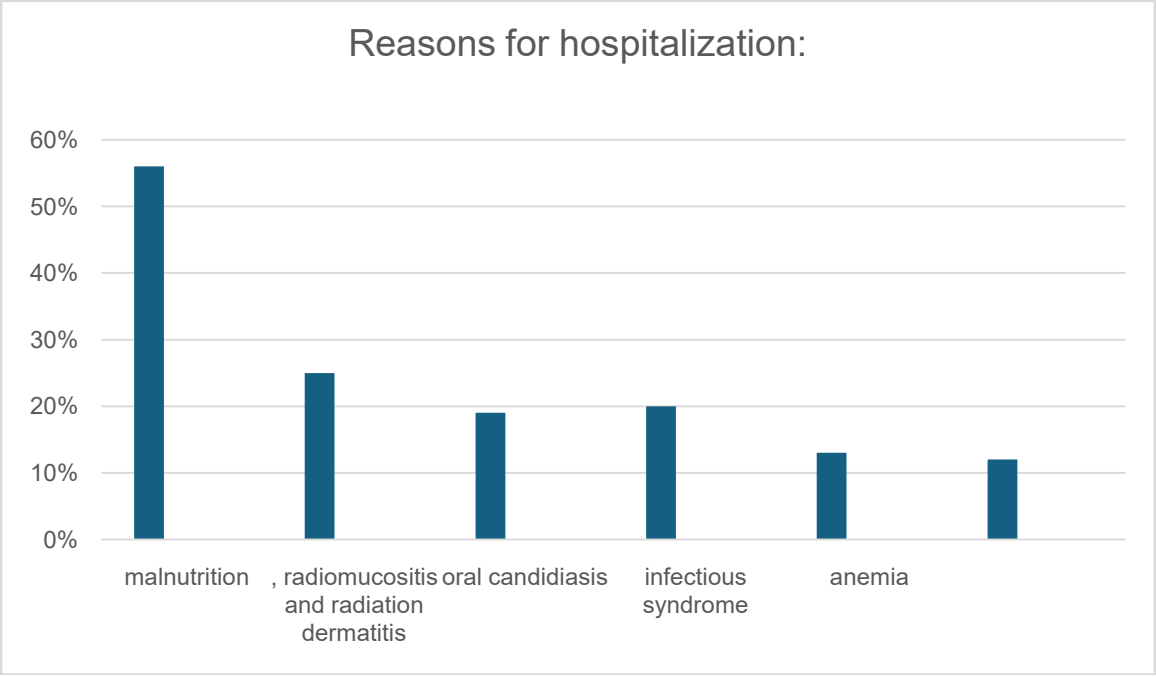
The locations of the ORL cancers in these hospitalized patients are diverse; the most common is nasopharyngeal cancer, representing 50% of the hospitalized patients, followed by oral cavity cancer at 20%, and laryngeal cancer at 13%. Other ORL locations account for only 17% of the cases.



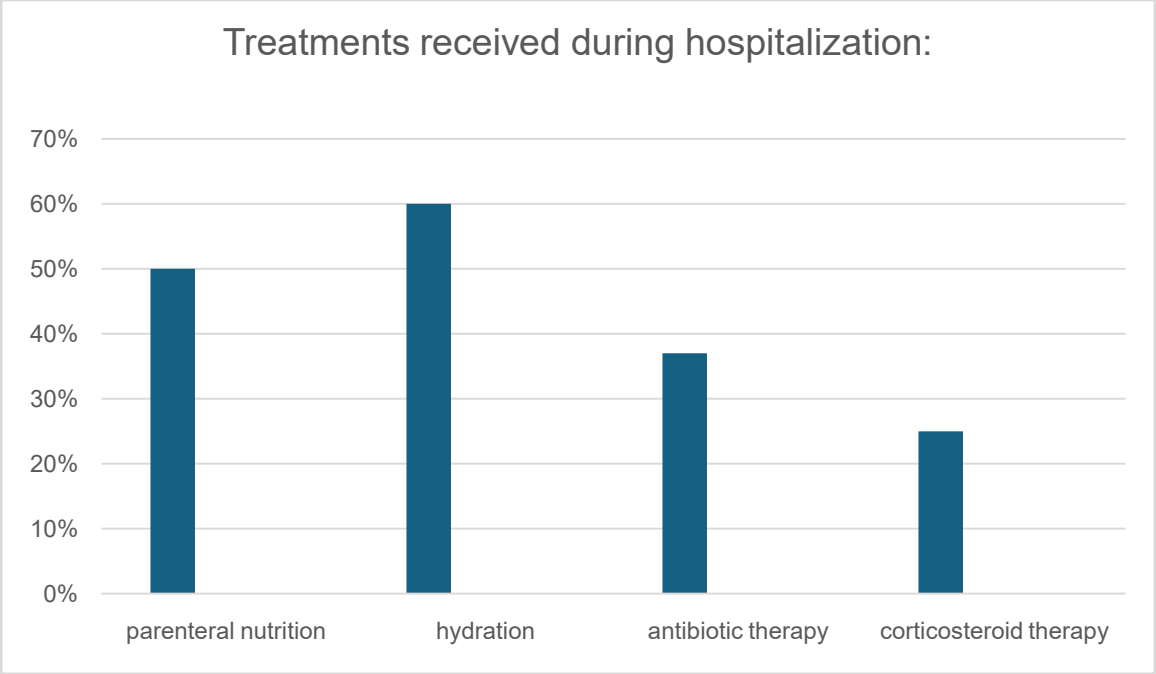
70.5% of hospitalized patients received concomitant chemotherapy with radiotherapy, and 29.5% received radiotherapy alone .



The reasons for hospitalization are diverse and numerous. The most common are malnutrition caused by dysphagia in 56% of patients, radiomucositis and radiation dermatitis in 25% of patients, oral candidiasis in 19% of patients, infectious syndrome in 20% of patients, anemia in 13% of patients, and febrile neutropenia in 12% of patients.



During hospitalization, these patients received several treatments, including parenteral nutrition in 50% of patients, prophylactic PEG tube in 10% of patients, transfusion in 13% of patients, analgesics in 50% of patients, hydration in 60% of patients, corticosteroid therapy in 25% of patients, and antibiotic therapy in 37% of patients



The average length of hospitalization ranges from 3 days to 45 days, with an average hospitalization duration of 15 days

Discussion:-

The toxicity of healthy tissues caused by radiotherapy (such as radiomucositis, radiation dermatitis, xerostomia, dysphagia, and malnutrition) is a limiting factor for the success of radiotherapy and chemoradiotherapy in patients with head and neck cancer. However, the indicators used to monitor these toxicities have historically been rudimentary and underutilized, and physicians often underreport toxicity [9 8]. Improved methods for documenting toxicity would contribute to assessing the benefits of treatments and to a thorough analysis of clinical factors that predispose patients to treatment-related toxicity. The use of these factors could help clinicians identify patients with increased radiosensitivity and tailor prophylaxis, treatment, and follow-up accordingly. This study aims to use hospitalization as an indicator of severe toxicities in patients undergoing radiotherapy for head and neck cancers and to evaluate the clinical and treatment-related factors associated with hospitalization.We found that 54.7% of patients were hospitalized for treatment-related toxicity during or within 8 weeks following the completion of treatment. This percentage of patients with severe acute toxicities is higher than that reported for similar patients in other studies. A study evaluating radiotherapy for squamous cell carcinoma of the base of the tongue reported severe acute toxicity in 3.9% of 333 patients [10]. A study involving 100 patients treated with IMRT for head and neck cancers (HNC) reported that 8% and 5% of patients experienced Grade 4 and Grade 5 toxicities, respectively, although Grade 3 toxicities were not reported.[11]

The reasons for acute hospitalizations in our study included malnutrition (56%), radiomucositis and/or radiation dermatitis (25%), candidiasis (19%), infectious syndrome (20%), anemia (13%), and febrile neutropenia (12%). Givens et al. found that 26.9% of patients were hospitalized for ambulatory intravenous infusions for nausea/vomiting, 26% were hospitalized for dehydration or malnutrition, 18.3% were hospitalized for severe fever, and 9.6% were hospitalized for mucositis. The lower number of hospitalizations found in our study may be due to the fact that only 70.5% of our patients received concomitant chemotherapy, while all patients in the Givens et al. study received concomitant radiotherapy and chemotherapy.The individual variation in the response of normal tissues to radiotherapy treatments is well documented [12 13] . Although recent studies have suggested that most of this variation has a genetic basis, it is also believed that patient-related factors, such as age or comorbidities, play a rôle [14 15]. We found that lung diseases and diabetes were associated with acute hospitalization in multivariate analysis. Our results are consistent with other studies that have found that age and comorbidities are associated with an increased risk of complications related to radiotherapy [16 17] . We did not find that age was a predictive factor for hospitalizations. Therefore, it may be that age itself is not as strong a risk factor as some of the pathological processes that become more common with age, such as COPD or diabetes. This is important because older patients

without comorbidities may not have increased toxicity rates and could therefore safely undergo aggressive chemoradiotherapy.

It is interesting to note that, although a history of smoking and current smoking are known to have a detrimental effect on disease and survival outcomes in head and neck cancers (HNC) [18 19] , we did not find that a history of smoking was associated with an increase in severe acute treatment-related complications. The harmful effects of smoking may result from more insidious damage rather than an exacerbation of acute processes. Nevertheless, our study provides additional evidence that identifiable non-genetic patient-related factors play a role in the inter-individual variation in normal tissue toxicity We also found that the prescribed dose was significantly associated with hospitalization during treatment in the multivariate analysis. This is not surprising, as previous studies have shown that a higher total dose leads to increased acute toxicity [20 21] . Concomitant chemotherapy was associated with hospitalization during radiotherapy in the univariate analysis. This reinforces what is well known regarding the potential of chemotherapy to exacerbate radiotherapy complications [3 4] . Our results show that 70.5% of hospitalized patients received concomitant chemotherapy with radiotherapy.

The prophylactic placement of a Percutaneous endoscopic gastrostomy (PEG)tube was associated with an increase in acute hospitalizations in the univariate analysis, but not in the multivariate analysis. The use of prophylactic feeding tubes is currently controversial, and practices vary from one institution to another. While some studies suggest that prophylactic PEG tubes reduce treatment-related weight loss and hospitalization durations, others have failed to show a significant reduction in these two parameters. If prophylactic PEG tubes do not reduce severe acute toxicities, as suggested by our study, they should be used with caution, as the risks of prophylactic PEG tubes include prolonged dependence on tube feeding, late esophageal toxicities, and impaired quality of life [22 23] .
Our study is limited by the fact that the decision to admit a patient or to treat a patient more aggressively may be subjective or dictated by institutional policy and experience. This could have implications for the applicability of the results to other institutions. Although the results of our study suggest that hospitalization is a reasonable indicator of treatment toxicity in our institution, further studies are needed to confirm its validity as an indicator of toxicity in other institutions.This research may help guide care and identifying which patients are at risk of hospitalization before treatment will assist in making decisions about the initiation of pre-treatment prophylactic strategies, such as consultations for pain management and scheduled intravenous hydration. It would also allow us to adjust modifiable factors, such as the radiation dose and concomitant chemotherapy, to make the treatment less toxic for high-risk patients.

Conclusion:-

Hospitalization in head and neck cancer patients who have already been treated or are undergoing radiotherapy is often necessary due to the severity of treatment-related side effects, such as radiomucositis, radiation dermatitis, febrile neutropenia, and complications related to tumor progression, primarily dysphagia and deterioration of general health. Cautionary strategies and preventive care concerning these variables should be applied when evaluating patients with head and neck cancer for radiotherapy or chemoradiotherapy strategies.

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