

Determine The Role of Locoregionally Advanced Oral Cancer (LAOC) Neoadjuvant Chemotherapy(NACT)

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Abstract Background: Oral cancer (OC) ranks as the sixth most prevalent kind of cancer in the United States, according to researchers. According to many studies, the head and neck account for 40% of all cancer cases in India. Low rates of survival after surgery and postoperative irradiation (PORT) for advanced malignancies have prompted researchers to consider NACT as a viable treatment option. **Objectives:** To evaluate the role of NACT in LAOC. **Methodology:** We gathered demographic data, clinical history, prior medical history, family history, and social history using standard, semi-structured questionnaires and required investigations in 40 patients using a prospective analytical type of research. All patients received NACT and were followed for six months. **Result and Conclusion:** We found that nausea-vomiting was the most prevalent adverse event after NACT, followed by neutropenia (11.66%), diarrhea (8.33%), and anemia (up to 3.33%). Thus, we conclude that, during the 6-month follow-up, we found no disease recurrence. The buccal-alveolar complex was also affected in several patients. The utilization of induction CT in cases of T4b unresectable cancer has been found to slow disease development, yield a partial macroscopic response, and be safe and feasible. This strategy should increase survival rates for patients who have surgery.

Key Words Oral cancer, NACT, PORT, Buccal-alveolar complex, LAOC

1. Introduction

Studies revealed that OC ranks as the sixth-most prevalent form of cancer in the nation. Head and neck cancer accounts for 40% of all malignancies in India. The oral cavity is the primary location for malignant tumors within the head and neck region. Due to significant advancements in treatment, procedures, radiotherapy, radiation, and recovery over the past five decades, oral cancers have become increasingly challenging for surgeons to address [1]–[3]. Studies have revealed that, in India, the most common primary locations for OC are the buccal mucosa and retromolar trigone. Studies have also proved that, in India, its prevalence is significantly higher than in any other region. Researchers showed that the male-to-female ratio for oral cancer was 2:5. Researchers also observed that the disparity in the incidence rates between males and females in India may be attributed to variations in smoking behaviors. In a case-control analysis focused on the oral cavity in one study, the data revealed notable differences between male and female participants, wherein 39% of females were engaged in tobacco chewing. In contrast, only 9.6% of males were found to do so. Additionally, in another study, 63% of males were identified as smokers, while less

than 1% of females were found to smoke [4]–[8].

Researchers in the past have investigated NACT as a potential treatment option due to the limited survival rates observed in advanced cancers following surgery and PORT. Studies also revealed that it is administered before surgical intervention, where a series of 2 to 3 CT sessions can be administered. Furthermore, the 2 most commonly employed treatment protocols consist of the combination of cisplatin and 5-fluorouracil and the combination of cisplatin and bleomycin. Studies concluded that an average response level of 80% is frequently attained, with a complete response rate of 30% [8]–[10]. Hence, the aim of our study was to evaluate the role of NACT in LAOC.

2. Review of Literature

In India, the incidence of C in the head and neck accounts for forty percent of the total C cases in the country. This proportion is derived from the overall number of instances of cancer that occur throughout the country [1]. The oral cavity, often known as the mouth, is the most significant anatomical site within the head and neck region [1]. Despite the significant advances achieved in the fields of diagnosis,

surgery, radiation, chemotherapy, and reconstruction over the preceding fifty years, oral malignancies continue to provide a severe challenge for surgeons. This is because oral cancers tend to spread quickly. This is still the case even though oral tumors may be found earlier than they used to be in the past. The key areas seen most of the time in India are the buccal mucosa and the retromolar trigone. There is a significant difference in the incidence rates between the sexes in India, which may be at least partially attributable to the many ways in which people engage in tobacco use. There is a disparity in the incidence rates between the sexes in India. In addition, the findings of many studies have shown that neoadjuvant chemotherapy, also known as NACT, is advantageous. These studies have found several benefits, such as a reduction in tumor size, better local control, a lower risk of recurrence, a lower chance of distant metastasis, the preservation of affected organs in operable tumors, less need for postoperative radiotherapy, less need for mandibulectomy, and a survival rate increase of between 4% and 6%. These benefits are just some of the many that have been reported. These advantages are only a few benefits that may be enjoyed. In addition to these benefits, there was a notable increase in the survival rate, which varied from 4% to 6%. This change was statistically significant. Myelosuppression is one of the potentially dangerous results that have been identified as a direct consequence of the treatment. This is one of the side effects that have been discovered. Thrombocytopenia, anemia, and leukopenia are all illnesses that may be seen as symptoms of this illness [11], [12].

3. Objectives

To evaluate & assess the role of NACT in LAOC.

Inclusion Criteria

- 1) Patients with histologically proven OSCC T4a, T4b, N3 disease.
- 2) Patients with previously untreated cases.
- 3) Patients with age between 20 to 80 years.
- 4) Patients with no distant metastases, normal renal & hepatic functions.
- 5) Patients with non-pregnant females .
- 6) Those patients who were willing for contraceptive pills for 8 month.

Exclusion Criteria

- 1) Patients who were previously treated.
- 2) Patients with age below 20 & above 80 years.
- 3) Patients with distinct metastases, abnormal renal & hepatic function.
- 4) Patients who were pregnant.

4. Methodology

Our study was a prospective analytical type that was conducted at the Department of Oncology, KIMS, Karad, starting from December 2017 and ending in June 2019 in patients with T4a, T4b, and N3 in oral cavity & palpable neck nodes

	Gender	Frequency	Percent
valid	Male	35	87.5
	Female	5	12.5
	Total	40	100

Table 1: Gender wise distribution

Age Group	No of cases	Percentage
21-30	3	7.5
31-40	7	17.5
41-50	13	32.5
51-60	8	20
61-70	5	12.5
71-80	4	10
Total	40	100

Table 2: Age wwise distribution

with around 40 in total using a convenient sampling method. We have collected demographic data, clinical history, past medical history, family history & social history, etc., with the help of standard, semi-structured performa followed with the necessary investigation. After which all patient were given NACT(cisplatin 80mg/m²over 2days & 5-fluorouracil 750mg/m² for 4 days with hydration & anti-emetics (3 cycles for every 4 weeks) & later if resectable then taken for surgery. The follow-up was done for six months.

Statistical Analysis

The data was entered in MS Excel spreadsheets version 2016 and presented in tables to know the measures of central tendency and study distribution. Statistical analysis was done using IBM SPSS version 22.0 software. The student t-test was used for normally distributed variables, the chi-square test was used for association between categorical or nominal variables, and the outcome of interest was calculated within 95% confidence limits. The difference between the two observations was considered significant if the calculated value was a p-value up to 0.05.

5. RESULT

In Table 1, we found that the majority of the patients were males, up to 35 out of 40 (87.5%), whereas females were only 5 up to 12.5%. Hence, the male-to-female ratio was 1:0.142.

In Table 2, we found that, majority of the patients were from 41-50 group upto (32.5%) whereas very less upto (7.5%) in 21-30 years of age group.

In Table 3, we found that, majority of the patients showed OC at buccal-alveolar complex upto (87.5%) and minimum patients was (5%).

In Table 4, we classified the patients according to various parameters such as tumor size and nodal status. Here, we

Site of Cancer	Number of cases	Percentage
Tongue	3	7.5
Buccal -alveolar Complex	35	87.5
Hard Palate	2	5
Total	40	100

Table 3: Site of OC

Staging	No. of Cases	Percentage
T4a	28	70
T4b	12	30
N3	6	15

Table 4: Staging

Response Achived Afer NACT	No. of Patients	Percentage
Satisfactory Response	11	27.5
Stable Disease	23	57.5
Unsatisfactory Response	6	15
Total	40	100

Table 5: Response after NACT

found that 70% of cases belonged to T4a, 30% to T4b, and 15% to the N3 group.

In Table 5, we found that the majority of the patients showed stable disease up to 57.5 percent and the minimum showed unsatisfactory disease up to 15 percent.

In Table 6 we found that, no recurrence rate was seen at 6 month follow-up for NACT.

In Table 7 we found that, following NACT, most common adverse event was nausea-vomiting among 28.33% which was followed by neutropenia among 11.66%, diarrhoea among 8.33% & anaemia upto 3.33

6. Discussion and Conclusion

Based on our current research, it seems that induction CT could be used as a more aggressive way to treat oral cavity SCC, with no reported cases of death or recurrence. The literature review results also showed that using induction CT to diagnose non-metastatic oral cavity SCC could be more accurate. Thus, researchers have also concluded the role of induction CT in enhancing organ survival for larynx, oropharynx, and hypopharynx tumors. In addition, the above studies also proved that induction CT is employed for treating oral cavity SCC, a condition requiring extensive surgical procedures such as a tongue or laryngectomy. Thus, the tumor's well-preserved vascular system enables the more efficient delivery of CT prior to surgical intervention or radiotherapy [7].

Based on our findings, during the 6-month follow-up, no recurrence of the disease was detected. It was also noted that a significant number of patients exhibited OC located at the buccal-alveolar complex. The utilization of induction

Recurrence	No. of Patients	Percentage
Yes	0	0
No	40	100
Total	40	100

Table 6: Recurrence

Adverse Events	No. of Patients	Percentage
Anemia	2	3.33
Neutropenia	7	11.66
Vomiting	17	28.33
Diarrhoea	5	8.33

Table 7: Adverse effects

CT in cases of T4b unresectable cancer has been found to effectively impede disease progression, yield a partial macroscopic response, and demonstrate a favorable safety profile and feasibility. This approach is expected to result in a higher likelihood of survival for surgical patients. Additional multi-institutional trials involving larger cohorts and the collection of prospectively gathered data are necessary to establish a conclusive protocol or determine the potential impact of NACT in treating inoperable oral malignancies.

Conflict of Interest

The authors declare no conflict of interests. All authors read and approved final version of the paper.

Authors Contribution

All authors contributed equally in this paper.

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