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**ORIGINAL ARTICLE**

# Concurrent Chemo-Radiotherapy of Weekly Paclitaxel Versus Weekly Carboplatin in Locally Advanced Head and Neck Carcinomas Unfit for Cisplatin

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## ABSTRACT

**Background:** Chemoradiotherapy have an important role in the treatment of locally advanced head and neck cancers, in old age patients with, renal and cardiac dysfunction ineligible for cisplatin, we compared weekly paclitaxel versus weekly carboplatin. Our study aimed to compare the efficacy and toxicities of chemo radiotherapy of weekly paclitaxel versus weekly carboplatin in locally advanced head and neck carcinoma. **Methods:** The study divided in two arms, paclitaxel arm; 25patients treated by weekly paclitaxel 40mg/m$^2$ with radiotherapy and carboplatin arm; 25 patients treated by weekly 150mg carboplatin with radiotherapy. The three-dimensional radiotherapy planned (3DCRT) was 65 to 70 GY and 1.8 -2 GY /fraction, 5 fractions/week in 6-7 weeks.

**Results:** There was an insignificant 5-year disease free survival was 79.5% in carboplatin arm versus 84.6% in paclitaxel arm and 5-year OS was an insignificant 76% in carboplatin arm versus 72% in paclitaxel arm (p-value=0.646). A 44% of both arms had overall complete remission. A 16% of patients received carboplatin had grade III/IV mucositis. Patients in paclitaxel arm had more grade II neuropathy (60%). A comparable rate of neutropenia had occurred in both arms.

**Conclusions**: Both arms of concurrent chemo radiotherapy had acceptable toxicities with good quality of life response to treatment where 44% of both arms had complete response (p-value=0.623). There was an insignificant 5-year disease free survival was 79.5% in carboplatin arm versus 84.6% in paclitaxel arm and 5-year OS was an insignificant 76% in carboplatin arm versus 72% in paclitaxel arm (p-value=0.646).

**Keywords:** chemo-radiotherapy, paclitaxel, carboplatin, head& neck carcinoma

## INTRODUCTION

The head and neck cancers were 17% of all cancers in Egypt **[1].** But in United State of America the head and neck cancer about 3 to 5% of all malignant and about 90 % was squamous cell carcinoma and the incidence of head and neck and about 40000 people per year **[2].** Most of squamous cell carcinoma presented in locally advanced stage and treated with chemo radiotherapy protocols **[2].** There were trials and meta-analysis confirm benefits of survival and organ preservation adding chemotherapy to radiotherapy in many sequences especially concurrent chemo-radiotherapy **[3].** Treatment protocols that incorporate a combination of systemic agents and radiation are being widely investigated in this setting with the goal of increasing both locoregional and metastatic disease control **[4]** So, the optimal drugs, doses and sequences of concurrent chemotherapy and radiotherapy for head and neck cancer under investigation. paclitaxel is single active agent in treatment of head and neck cancers with response ranging from 20 to 40% and can combined with different chemotherapy agents concurrently with radiotherapy with significant results **[5].** The paclitaxel produces microtubule stabilization and a cell cycle blockade at the G2 phase to mitosis (G2/M) transition **[6].** The carboplatin is potent radiosensitizer (DNA-damaging platinum agent) in stage III and Iva head and neck cancers **[7]** and has the advantage of decreased incidence of side effects, such as renal and ear toxicities **[8].** This study aimed to comparing the efficacy and toxicities of chemo radiotherapy of weekly

paclitaxel versus weekly carboplatin in locally advanced head and neck carcinoma.

## METHODS

This phaseII prospective study was conducted in Clinical Oncology & Nuclear Medicine Department, Faculty of Medicine, Zagazig University Hospitals, Fakous Cancer Center and Ain Shams Clinical Oncology Department in the period from January 2014 to January 2016, written informed consent was obtained from all participants, the study was approved by the research ethical committee of the institutes the study done in them. The study was done according to The Code of Ethics of the World Medical Association (Declaration of Helsinki) for studies involving humans.

The patients were randomized into two arms.

Paclitaxel arm: 25 patients received weekly 40 mg /m2 paclitaxel administered as an IV 2h infusion for 6-7 weeks with 3DCRT 65 -70 Gy in 1.8 -2 Gy 5 fractions /week.

Carboplatin arm; 25 patients received weekly 150mg carboplatin administered as an IV 1h infusion for 6-7 weeks with 3DCRT 65 -70 Gy in 1.8 -2 Gy 5 fractions/week

***Eligibility criteria:***

Confirmed pathology head and neck Carcinoma. No Previous treatment (chemotherapy, radiotherapy or both). PS; 1-2. Age; 18 to 65 years. Stage; T2, T3, T4 - N1, N2, N3 - MO stage (III and IV A) non metastatic according to AJCC 2017. Creatinine clearance 40-60 ml/min by 24-hour urine collection, cardiac dysfunction (a history of unstable angina pectoris or myocardial infarction), hearing impairment or respiratory impairment.

***Radiation therapy technique:***

All patients were treated in supine position with fixation of head, neck and shoulders using thermoplastic mask, 3D conformal external-beam radiotherapy with conventional fractionation schedules (1.8 to2 Gy/Fr 5 days per week) had been used, the total dose was 65-70 Gy to gross tumor volume (GTV) with exclusion of spinal cord after 45 Gy (electron beam were used to boost posterior neck).

***Pretreatment evaluation***

Informed consent. Full history, physical examination. Head and neck examination including mirror and panendoscopic. Radiological investigation computed tomography (CT) and or magnetic resonance imaging (MRI) of the head and neck to define the extent of the disease and metastatic workup including (CT) computed tomography of chest and abdomen in all patients. Bone scan if indicated or PET-CT. Laboratory: complete blood picture, liver function tests and renal function tests. Pregnant test in female childbearing period. Radiation morbidity scoring criteria by RTOG and Systemic toxicities were graded according to the common toxicity criteria, version 2.

All patients had dental examination and oral care before radiotherapy.

***Post-treatment evaluation***

**Response** was assessed 7 weeks after ending of radiotherapy course through clinical examination, endoscopic examination, and CT and/or MRI of head and neck or PET-CT.

RECIST CRTERIA for response, **Complete response (CR**) was defined as complete regression of all evidence of tumor. **Partial response (PR)** was defined as an estimated decrease in tumor size of 50% or more. **Stationary disease (SD)** was defined as <50% decrease in tumor size or <25% increase in pretreatment tumor size. **Progressive disease (PD)** was defined as > 25% increase in pretreatment tumor size.

The follow up evaluation was done at 3 months interval during the first two years of follow-up CT OR MRI head and neck, CT chest and abdomen were performed every 6 months and bone scan if indicated.

The patients were randomized into two arms.

Paclitaxel arm: 25 patients received once weekly 40 mg /m2 paclitaxel administered as an IV 2h infusion before radiotherapy by half an hour for 6-7 weeks with 3DCRT 65 -70 Gy in 1.8 -2 Gy 5 fractions /week. Carboplatin arm; 25 patients received once weekly 150mg carboplatin administered as an IV 1h infusion before radiotherapy by half an hour for 6-7 weeks with 3DCRT 65 -70 Gy in 1.8 -2 Gy 5 fractions/week

***Statistical analysis***

Variables were expressed as the mean ± SD & median (range), and the categorical variables were expressed as number (percentage). Continuous variables were checked for normality by using Shapiro-Wilk test. Independent samples Student's t-test test was used to compare between two groups of normally distributed variables. Percent of categorical variables were compared using Pearson's Chi-square test or Fisher's exact test when was appropriate. Overall Survival (OS) was calculated as the time from diagnosis to death or the most recent follow-up contact (censored). Disease Free Survival (DFS) was calculated as the time from start of treatment to reappearance of disease (local, regional, or distant) or the most recent follow-up in which recurrence was not detected (censored). These time-to-event distributions were estimated using the method of Kaplan-Meier plot, and compared using two-sided

exact log-rank test. All tests were two sided. A p-value <0.05 was considered significant. All statistics were performed using SPSS 22.0 for windows (SPSS Inc., Chicago, IL, USA) and MedCalc windows.

## RESULTS

There was an insignificant difference between both arms regarding age where mean age was 61.48 years in carboplatin arm versus 63.76 in paclitaxel arm (p-value=0.126). There was an insignificant difference between both arms regarding ECOG performance status where 60% of carboplatin arm had ECOG 2 versus 48% of paclitaxel arm (p-value=0.341). There was an insignificant difference between both arms regarding primary site where 40% of both arms had laryngeal carcinoma (p-value=0.970). There was an insignificant difference between both arms regarding tumour grade where 48% of carboplatin arm had grade II tumours versus 56% of paclitaxel arm (p-value=0.803). There was an insignificant difference between both arms regarding T stage where 44% of carboplatin arm had T2 tumours versus 40% of paclitaxel arm (p-value=0.742). There was an insignificant difference between both arms regarding N stage where 36% of carboplatin arm had N2 tumours versus 40% of paclitaxel arm (p-value=0.607). There was an insignificant difference between both arms regarding AJCC TNM stage grouping where 44% of carboplatin arm had stage III tumors versus 36% of paclitaxel arm (p-value=0.465) **(Table 1).**

**Outcome**

There was an insignificant difference between both arms regarding response to treatment where 44% of both arms had complete response (p-value=0.623). There was an insignificant difference between both arms regarding grade of mucositis where 52% of carboplatin arm had grade I mucositis versus 40% of paclitaxel arm (p-value=0.427). Patients in paclitaxel arm had more neuropathy than patients in carboplatin arm where 60% of paclitaxel arm had grade II neuropathy versus 8% of carboplatin arm (p-value<0.001). There was an insignificant difference between both arms regarding grade of neutropenia where 36% of carboplatin arm had grade I neutropenia versus 48% of paclitaxel arm (p-value=0.390). There was an insignificant difference between both arms regarding relapse where 18.2% of carboplatin arm had relapse versus 15.4% of paclitaxel arm (p-value=1.000). There was an insignificant difference between both arms regarding disease free survival where 5-year DFS was 79.5% in carboplatin arm versus 84.6% in paclitaxel arm (p-value=0.807). There was an insignificant difference between both arms regarding mortality where 24% of carboplatin arm died versus 28% of paclitaxel arm (p-value=0.747). There was an insignificant difference between both arms regarding overall survival where 5-year OS was 76% in carboplatin arm versus 72% in paclitaxel arm (p-value=0.646) **(Table 2) and (Figure 1).**

**Table (1):** Comparison between carboplatin arm and paclitaxel arm regarding basic characteristics.

| Basic characteristics | Carboplatin arm (N=25) | | Paclitaxel arm (N=25) | | p-value |
|---|---|---|---|---|---|
| | No. | % | No. | % | |
| Age (years) | | | | | |
| Mean ± SD | 61.48 | ±5.97 | 63.76 | ±4.21 | 0.126[a] |
| Median (Range) | 62 | (45 – 70) | 64 | (57 – 70) | |
| ECOG PS | | | | | |
| ECOG 1 | 10 | 40% | 13 | 52% | 0.341[b] |
| ECOG 2 | 15 | 60% | 12 | 48% | |
| Primary site | | | | | |
| Nasopharynx | 7 | 28% | 7 | 28% | 0.970[b] |
| Larynx | 10 | 40% | 10 | 40% | |
| Oropharynx | 4 | 16% | 4 | 16% | |
| Hypopharynx | 1 | 4% | 2 | 8% | |
| Paranasal Sinus | 3 | 12% | 2 | 8% | |
| Grade | | | | | |
| Grade I | 5 | 20% | 5 | 20% | 0.803[b] |
| Grade II | 12 | 48% | 14 | 56% | |
| Grade III | 8 | 32% | 6 | 24% | |
| T | | | | | |
| T1 | 1 | 4% | 0 | 0% | 0.742[b] |
| T2 | 11 | 44% | 10 | 40% | |
| T3 | 9 | 36% | 11 | 44% | |

| Basic characteristics | Carboplatin arm (N=25) | | Paclitaxel arm (N=25) | | p-value |
|---|---|---|---|---|---|
| | No. | % | No. | % | |
| T4 | 4 | 16% | 4 | 16% | |
| N | | | | | |
| N0 | 5 | 20% | 3 | 12% | 0.607[b] |
| N1 | 8 | 32% | 6 | 24% | |
| N2 | 9 | 36% | 10 | 40% | |
| N3 | 3 | 12% | 6 | 24% | |
| Stage | | | | | |
| Stage III | 15 | 60% | 11 | 44% | |
| Stage IVa | 10 | 40% | 14 | 56% | 0.465[b] |

Categorical variables were expressed as number (percentage); Continuous variables were expressed as mean ± SD & median (range); a: Independent samples Student-t test; b: Chi-square test; p-value<0.05 is significant.

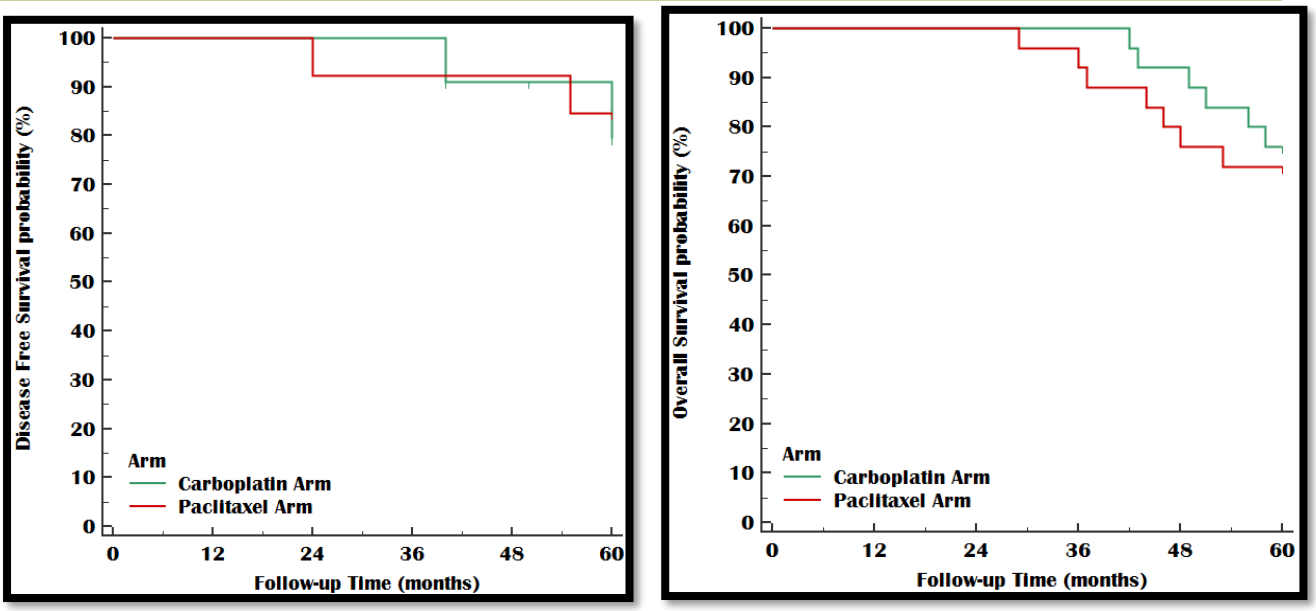
**Table (2):** Comparison between carboplatin arm and paclitaxel arm regarding outcome.

| Outcome | Carboplatin arm (N=25) | | Paclitaxel arm (N=25) | | p-value |
|---|---|---|---|---|---|
| | No. | % | No. | % | |
| Response | | | | | |
| CR | 11 | 44% | 13 | 52% | 0.670[b] |
| PR | 9 | 36% | 10 | 40% | |
| SD | 3 | 12% | 1 | 4% | |
| PD | 2 | 8% | 1 | 4% | |
| Mucositis | | | | | |
| GI | 13 | 52% | 10 | 40% | 0.427[b] |
| GII | 8 | 32% | 13 | 52% | |
| GIII | 3 | 12% | 2 | 8% | |
| GIV | 1 | 4% | 0 | 0% | |
| Neuropathy | | | | | |
| GI | 23 | 92% | 4 | 16% | <0.001[b] |
| GII | 2 | 8% | 15 | 60% | |
| GIII | 0 | 0% | 5 | 20% | |
| GIV | 0 | 0% | 1 | 4% | |
| Neutropenia | | | | | |
| G0 | 16 | 64% | 13 | 52% | 0.390[b] |
| GI | 9 | 36% | 12 | 48% | |
| Relapse | (N=11) | | (N=13) | | |
| Absent | 9 | 81.8% | 11 | 84.6% | 1.000[b] |
| Present | 2 | 18.2% | 2 | 15.4% | |
| DFS | | | | | |
| Mean DFS | 58.18 months | | 56.85 months | | 0.807[c] |
| (95%CI) | (53.37 – 62.99) | | (51.64 – 62.05) | | |
| 2-year DFS | 100% | | 92.3% | | |
| 3-year DFS | 100% | | 92.3% | | |
| 4-year DFS | 90.9% | | 92.3% | | |
| 5-year DFS | 79.5% | | 84.6% | | |
| Mortality | (N=25) | | (N=25) | | |
| Alive | 19 | 76% | 18 | 72% | 0.747[b] |
| Died | 6 | 24% | 7 | 28% | |
| OS | | | | | |
| Mean OS | 57.56 months | | 54.92 months | | 0.646[c] |
| (95%CI) | (55.51 – 59.61) | | (51.36 – 58.48) | | |
| 2-year OS | 100% | | 100% | | |
| 3-year OS | 100% | | 92% | | |
| 4-year OS | 92% | | 76% | | |
| 5-year OS | 76% | | 72% | | |

Categorical variables were expressed as number (percentage); 95%CI: 95%Confidnece interval; b: Chi-square test; c: Log rank test; p-value<0.05 is significant.

**Table (3):** Comparison between our study and previous studies.

| Study | Phase | Arms | CR | DFS | OS | Mucositis |
|---|---|---|---|---|---|---|
| **Sunwoo *et al.*** | II | - Pac (3w) | 70% | 3y: 51.1% | 3y: 57.8% | III: 88% |
| **(2001) [18]** | | | | | | |
| **Hamed *et al.*** | III | - Cis (w) | 69.2% | 2y: 57.1% | 2y: 50% | III: 23.1% |
| **(2011) [19]** | | - Pac (w) | 76% | 2y: 60% | 2y: 56% | III: 32% |
| **Hamauchi *et al.*** | Retro | - Carb | 70% | 2y: 68% | 2y: 74% | III/IV: 56% |
| **(2015) [20]** | | | | | | |
| **Current study** | III | - Carb (w) | 44% | 5y: 79.5% | 5y: 67% | III/IV: 16% |
| **(2020)** | | - Pac (w) | 44% | 5y: 84.6% | 5y: 72% | III/IV: 8% |




**A** **B**

**Figure (1):** Kaplan-Meier plot: (A) Disease Free Survival (DFS); (B) Overall survival (OS).

## DISCUSSION

Multiple randomized trials, including trial of the Veterans Affairs Laryngeal Cancer Study Group provided good evidence that concurrent chemotherapy and RT is the best approach to treat locally advanced head and neck cancer [**9, 10].** Combined modality was significantly reduced the risk of mortality compared with radiotherapy alone [**11].** The best regimen has not been defined. The MACH-NC meta-analysis found high benefits for platinum-based versus other chemotherapy regimens. Many regimens have not been directly compared with each other in adequately powered, randomized trials. High-dose cisplatin is considered the preferred regimen, but it is associated with severe acute and late toxicities, full-dose infusion cisplatin is typically indicated for patients had excellent performance status and minimal comorbidities [**12, 13].** Carboplatin is high bone marrow toxicities than cisplatin but causes less peripheral nerve toxicities, renal toxicities, and vomiting [**14-16].** Weekly carboplatin (AUC of 1.5 to 2) is an option as an alternative to cisplatin, especially in patients with renal disease, poorer performance status, or those who may have difficulty tolerating the fluid volume associated with bolus cisplatin [**17].** Paclitaxel administers every week in combination with radiotherapy is promising treatment for advanced HNSCC [**18].** Weekly paclitaxel had a comparable effectiveness to weekly cisplatin but in expense of higher frequency of toxicity [**19].** In this study, weekly carboplatin was equally effective like weekly paclitaxel however carboplatin caused less toxicity. A 44% of both arms had overall complete remission, our figure less than expected and also less than previous studies, this may be due to our study included high percentage of patients with poor prognostic factors e.g., high tumor grade, high tumor stage and also may be due to utilizing three-dimensional radiotherapy rather than other radiotherapy approaches that allow to use higher prescription dose. A 16% of patients received carboplatin had grade III/IV mucositis. Rate of mucositis in both arms was less than other previous studies, this

may be due to our study included more patients with good performance status than other studies or may be due to use a different dose of concurrent chemotherapy. Patients in paclitaxel arm had more grade II neuropathy (60%). A comparable rate of neutropenia had occurred in both arms. There was an insignificant difference between both arms regarding relapse (18.2% versus 15.4% in carboplatin and paclitaxel arms, respectively. 5-year DFS was 79.5% in carboplatin arm versus 84.6% in paclitaxel arm. Mortality where 24% of carboplatin arm died versus 28% of paclitaxel arm. 5-year OS was 76% in carboplatin arm versus 72% in paclitaxel arm.

Sunwoo *et al.* [18] the study with 33 patients with locally advanced head and neck were treated with paclitaxel was administered as a 120-hour continuous infusion every 3 weeks with course radiation therapy at 1.8 Gy/d to a total dose of 70.2 to 72 Gy. Three months after therapy, a 76% complete response (CR) at the primary site and a 70% overall CR was achieved. At 36 months, local control was 55.7%, overall survival was 57.8%, and disease-free survival was 51.1%. Local toxicities including mucositis, dysphagia, and skin reactions were severe but tolerable.

Hamed *et al.* [19] another study of 52 patients were randomly assigned to one of the two concomitant chemoradiation arms: arm I (n=26) and arm II (n= 26) who received paclitaxel 20 mg/m$^2$ I/V 1 hour infusion before radiation, repeated weekly for 6 cycles, and cisplatin 30 mg/m$^2$ I/V 1 hour infusion before radiation, repeated weekly for 6 cycles, respectively. The radiotherapy dose was 66-70 Gy, 1.8-2 Gy/day, 5#/Week in 6-7 weeks. Response rates were 76 and 69.2% in arm I and arm II, respectively and hematological toxicity was generally mild. On the contrary, non-hematologic toxicities were severe. Mucositis occurred in 32% in arm I and in 23.1% in arm II. The dermatitis GIII was 28% in arm I and 11.5% in arm II. The 2-year local- control figures were 60 and 57.1% in arm I and arm II, respectively. But the 2-year PFS were 36.8 and 33.3% in arm I and arm II respectively, while the 2-year OS were 56 and 50% in arm I and arm II, respectively.

Hamauchi *et al.* [20] retrospectively data of 25 locally advanced head and neck cancers patients who received combined carboplatin plus radiotherapy. Carboplatin was administered every 3weekls or weekly. Complete response was observed 70% patients. Median PFS duration was 42.7 months. The 2-year PFS and OS rates were 68 and 74%, respectively. The main toxicity Grade 3 or 4 was oral mucositis (56%) and neutropenia (28%) .

In summary we have demonstrated that carboplatin had equal efficacy as paclitaxel. Carboplatin caused less neuropathy than paclitaxel. So, we recommend use carboplatin as a concurrent chemotherapy agent during radiotherapy rather than paclitaxel. Because of small sample size and use of three-dimensional radiotherapy with maximum dose of 66Gy. Therefore, further studies are needed with large sample sizes and yield IMRT, Arc therapy or VMAT.

**Conflict of interest**

The authors report no conflicts of interest. The authors along are responsible for the content and writing of the paper.

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## REFERENCES

1- **El-Bolkainy MN, et al.,** Head and neck in Egypt, topographic Pathology of cancer NCI Cairo university, (3rd edition) 2005; pp7.

2- **Wolf AM, Wender RC, Etzioni RB, Thompson IM, D'Amico AV, Volk RJ, et al.,** American Cancer Society guideline for the early detection of prostate cancer: update 2010. CA: CA Cancer J Clin. 2010; 60(2), 70-98.

3- **Forastiere AA, Goepfert H, Maor M, Pajak TF, Weber R, Morrison W, et al.,** Concurrent chemotherapy and radiotherapy for organ preservation in advanced laryngeal cancer. N Engl J Med. 2003; 349(22), 2091-8.

4- **Agarwala SS, Cano E, Heron DE, Johnson J, Myers E, Sandulache V, et al.,** Long-term outcomes with concurrent carboplatin, paclitaxel and radiation therapy for locally advanced, inoperable head and neck cancer. Ann Oncol. 2007; 18(7), 1224-9.

5- **Schrijvers D, Vermorken JB.** Role of taxoids in head and neck cancer. The Oncologist, 2000; 5(3), 199-208.

6-**Wang Y, Wu KC, Zhao BX, Zhao X, Wang X, Chen S, et al.,** A novel paclitaxel microemulsion containing a reduced amount of Cremophor EL: pharmacokinetics, biodistribution, and in vivo antitumor efficacy and safety. J Biomed Biotechnol. 2011; p 10.

7- **Fountzilas G, Ciuleanu E, Dafni U, Plataniotis G, Kalogera-Fountzila A, Samantas E, et al.,** Concomitant radiochemotherapy vs radiotherapy alone in patients with head and neck cancer. Med Oncology. 2004; 21(2), 95-107.

8- **Clark JI, Hofmeister C, Choudhury A, Matz G, Collins S, Bastian R, et al.,** Phase II evaluation of paclitaxel in combination with carboplatin in advanced head and neck carcinoma. Cancer, 2001; 92(9), 2334-40.

9- **Wolf GT, Fisher SG. Department of Veterans Affairs Laryngeal Cancer Study Group.** Induction chemotherapy plus radiation compared with surgery plus radiation in patients with

advanced laryngeal cancer. N Engl J Med. 1991; 324(24):1685-90.

10-**Spaulding MB, Fischer SG, Wolf GT.** Tumor response, toxicity, and survival after neoadjuvant organ-preserving chemotherapy for advanced laryngeal carcinoma. The Department of Veterans Affairs Cooperative Laryngeal Cancer Study Group. J Clin Oncol. 1994; 12(8), 1592-9.

11- **Pignon JP, Le Maitre A, Maillard E, Bourhis J, Mach-Nc** Collaborative Group. Meta-analysis of chemotherapy in head and neck cancer (MACH-NC): an update on 93 randomised trials and 17,346 patients. Radiother Oncol. 2009; 92(1), 4-14.

12- **Adelstein DJ, Li Y, Adams GL, Wagner Jr H, Kish JA, Ensley JF, et al.,** An intergroup phase III comparison of standard radiation therapy and two schedules of concurrent chemoradiotherapy in patients with unresectable squamous cell head and neck cancer. J Clin Oncol. 2003; 21(1), 92-98.

13- **Forastiere AA, Zhang Q, Weber RS, Maor MH, Goepfert H, Pajak TF, et al.,** Long-term results of RTOG 91-11: a comparison of three nonsurgical treatment strategies to preserve the larynx in patients with locally advanced larynx cancer. J Clin Oncol. 2013; 31(7), 24:845.

14- **Fountzilas G, Ciuleanu E, Dafni U, Plataniotis G, Kalogera-Fountzila A, Samantas E, et al.,** Concomitant radiochemotherapy vs radiotherapy alone in patients with head and neck cancer. Med Oncol. 2004; 21(2), 95-107.

15- **Lokich J, Anderson N.** Carboplatin versus cisplatin in solid tumors: an analysis of the literature. Ann Oncol. 1998; 9(1), 13-21.

16- **Go RS, Adjei AA.** Review of the comparative pharmacology and clinical activity of cisplatin and carboplatin. J Clin Oncol. 1999; 17(1), 409-9.

17- **Chitapanarux I, Lorvidhaya V, Kamnerdsupaphon P, Sumitsawan Y, Tharavichitkul E, Sukthomya V, et al.,** Chemoradiation comparing cisplatin versus carboplatin in locally advanced nasopharyngeal cancer: randomised, non-inferiority, open trial. Eur J Cancer. 2007; 43(9), 1399-1406.

18- **Sunwoo JB, Herscher LL, Kroog GS, Thomas GR, Ondrey FG, Duffey DC, et al.,** Concurrent paclitaxel and radiation in the treatment of locally advanced head and neck cancer. J Clin Oncol. 2001;19(3), 800-11.

**19- Hamed RH, Elzahaf E.** Low Dose Weekly Paclitaxel Versus Low Dose Weekly Cisplatin with Concomitant Radiation in Locally Advanced Head and Neck Cancers. J Cancer Sci Ther. 2011; 3: 166-171.

**20- Hamauchi S, Yokota T, Onozawa Y, Ogawa H, Onoe T, Kamijo T, et al.,** Safety and efficacy of concurrent carboplatin plus radiotherapy for locally advanced head and neck cancer patients ineligible for treatment with cisplatin. Jpn J Clin Oncol. 2015; 45(12), 1116-21.

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