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DIFFERENCES OF TUMOR MASSES AND HEMOGLOBIN LEVELS IN CERVICAL CANCER SQUAMOUS CELL TYPE PATIENTS TREATED WITH COMBINATION OF PACLITAXEL AND CARBOPLATIN CHEMOTHERAPY

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Background: Paclitaxel and carboplatin are standard operating procedure for chemotherapy treatment of cervical cancer squamous cell carcinoma at Sanglah General Hospital, Bali-Indonesia. Chemotherapy improves outcome of cancer treatment. However, chemotherapy brings also a variety of adverse effects and complications. This study aims to evaluate the therapeutic and adverse effects of chemotherapy in patients with squamous cell cervical cancer. **Methods:** This is a case study of six patients with cervical cancer underwent chemotherapy paclitaxel and carboplatin 3-series at Sanglah General Hospital, Bali-Indonesia during January to November 2013. The therapeutic effect of chemotherapy was assessed from cervical cancer tumor mass measured before and after chemotherapy 3-series. The adverse effect of chemotherapy was determined from hemoglobin levels measured before and after chemotherapy. Data were analyzed using a paired t-test with a level of confidence of 95% using the SPSS to find out the differences. **Results**: In this study we found that there is a difference between tumor mass pre and post 3 series chemotherapy within $p < 0.05$. In term of toxic effect, we also obtained that there were difference of hemoglobin between pre and post of treatment within $p < 0.05$. **Conclusion**: Paclitaxel carboplatin as a chemotherapy drug in patients with cervical cancer is highly recomended when seen from the effects of reduced tumor size, and has a low side effect of anemia (anemia grade 1).

Keywords: cervical, cancer, chemotherapy, paclitaxel, carboplatin.

INTODUCTION

Cervical cancer is the second most common cancer suffered in women around the world. In 2002, cases of cervical cancer were reached 493,000 and recorded 274,000 people have died. Histological type found in cases of cervical cancer is cervical cancer derived from squamous cell is 85%, 21-23% of adeno carcinoma and adeno squamous carcinoma of approximately 3%.[1]

Chemotherapy is the treatment of cervical cancer that uses chemicals or drugs to kill cancer cells.(6) Paclitaxel and carboplatin are two drugs that combined as cervical cancer treatment procedures at Sanglah General Hospital, Bali-Indonesia. Chemotherapy is usually carried out for 6 cycles with an interval time of 2 to 3 weeks,[3] however, some patients in Sanglah Hospital may not do 6 chemotherapy cycles, because of the side effects of chemotherapy resulted in the patient's condition deteriorating making it impossible to continue chemotherapy after the 3rd cycle. Chemotherapy resulted in regression of the tumor mass, so that the tumor mass can be used as a measure of treatment effectiveness. Regression is a process of decreasing of the tumor mass so that the size of the cells back to initial sizes. Intake of paclitaxel-carboplatin combination chemotherapy could not be separated from its side effects. In one study, the combination of paclitaxel carboplatin resulted in 9-50 % of hematologic toxicity.[8]

Chemotherapy is shown to improve the outcome of cancer treatment. However, chemotherapy also brings with it a variety of side effects and complications. Therefore, the evaluation of the therapeutic effects and toxic effects is needed to optimize chemotherapy in patients with squamous cell cervical cancer.

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METHODS

This study was performed prospectively using cross sectional methods during the period of January to

November 2013. The sample selection method is consecutive sampling.

Patients and Method

The materials used are the result of data Ultrasonography (USG) of cervical cancer patients before and after chemotherapy, laboratory data that contains the value of hemoglobin levels before and after chemotherapy, informed consent sheet and medical records. USG examination uses SIUICTS-8800 digital ultrasound imaging system 4 dimension by an obstetrician. The blood tests in the Laboratory of Clinical Pathology, Faculty of Medicine Udayana University/Sanglah General Hospital uses a Cell-Dyn Ruby on each cycle of chemotherapy either before and after.

Sample

The sample was cervical cancer patients at Sanglah General Hospital Bali-Indonesia who fulfilled the inclusion criteria, that is: new patients with the squamous cell type of cervical cancer IIB-IIIB stage; were willing to involve the research, as well as the clinical condition and laboratory test results meet the requirements for treatment.

Data Analyzes

A number of 6 cervical cancer patients who fulfilled the inclusion criteria were measured for tumor mass before and after 3 series of chemotherapy. Hemoglobin levels of patients was recorded before and after first, second and the third chemotherapy series. Data were analyzed by paired t test with 95% of confidence level. The mean value of tumor mass and hemoglobin levels before and after chemotherapy had a significant difference when $p < 0.05$.[9]

RESULTS

Patients Characteristics

Characteristics of patients in this study are shown in Table 1.

Table 1
Patients' Characteristics Data

Characteristics	Amout (N=6)	%
Stage :		
IIB	3	50
IIIB	3	50
Age:		
48-55years	3	50
56-64years	3	50
Regions :		
Badung	1	16.7
Tabanan	2	33.4
Singaraja	1	16.7
Karangasem	1	16.7
Flores	1	16.7
Level of Education :		
Elementary School	4	66.6
Junior High School	-	
Senior High School	2	33.4

Difference of Tumor Mass Before and After Chemotherapy

The analysis results of differences in tumor mass volume before and after the 3 series of carboplatin with paclitaxel chemotherapy paired t-test is shown in Table 2.

Table 2
Tumor Mass Values Before and After 3 Series carboplatin Paclitaxel Chemotherapy

	N	Tumor Mass (cm^3)		*p*
		Mean	SD	
Before chemotherapy	6	110.15	66.75	0.015
After chemotherapy	6	40.33	31.28	

Remarks: N = Total Sample, *p* = Significance, SD = Standard Deviation

Table 3
Hemoglobin Level Before and After 3-Series Carboplatin Paclitaxel Chemotherapy

	N	Hemoglobin Level (g/dL)		*P*
		Mean	SD	
Before chemotherapy	6	11.85	1.14	0.023
After chemotherapy	6	10.30	0.69	

Remarks: N = Total Sample, *p* = Significance, SD = Standard Deviation

Paired t-test of tumor mass obtained the difference of the mass within p <0.05. This means that there is a significant difference in tumor mass before and after paclitaxel and carboplatin chemotherapy in patients with squamous cell cervical cancer

Difference of Hemoglobin Before and After Chemotherapy

Hemoglobin levels differences before and after paclitaxel and carboplatin chemotherapy was observed based on paired t-test as shown in Table 3. Table 3 reveals that there was impaired median difference of hemoglobin level of six patients before and after chemotherapy within $p < 0.05$.

DISCUSSION

Patients Characteristics

Six patients with cervical cancer who met the inclusion criteria for the study had undergone chemotherapy paclitaxel and carboplatin 3-series at Sanglah General Hospital, Bali-Indonesia during January to November of 2013. Table1 are shown the characteristics of the patient sample in this study. Patients in the study consisted of 3 patients with stage IIB and 3 patients with stage IIIB. Ages of patients ranged from 48 years to 64 years. The sixth patient worked as a housewife with the most elementary level of education. Patients' domicile regions are at Badung, Tabanan, Singaraja, Karangasem, and Flores.

Differences of Tumor Mass Before and After Chemotherapy

Tumor mass difference before and after chemotherapy occurs due to tumor regression. Regression is a process of decreasing of the tumor mass that the size of the cells can return to normal and is more likely to be appointed by the regression of the tumor mass because it can be used as a measure of treatment effectiveness.[2] Regression of the tumor mass may also improve the patient's clinical symptoms such as cessation bleeding, smelling vaginal discharge, and loss of pain radiating to the hips and legs dueto the spread of the pelvic cavity.[4]

Differences of Hemoglobin Before and After Chemotherapy

The differences in hemoglobin levels before and after administration of chemotherapy occur because platinum agents as cervical cancer chemotherapy can cause anemia. Platinum agents like carboplatin will cause disruption of iron metabolism and decrease the life span of erythrocytes. Iron plays a role in the formation of hemoglobin and other essential compounds such as myoglobin, cytochrome, cytochrome oxidase, peroxidase, and catalase.[2] Chemotherapy induced anemia by interferes with the process or processes of hematopoesis formation of blood cells, including precursor components of RBC (Red Blood Cells) in bone marrow.[5] In terms of the average hemoglobin levels of patients after chemotherapy, patients have anemia degree 1 as described in the Gynecologic Oncology Group (GOG) in which the degree of anemia hemoglobin level 1 has a range between 10.0 to 12.0 g/dL.

CONCLUSION

Paclitaxel and carboplatin as a chemotherapeutic drug is highly recomended when viewed from the effects of therapy which can reduce tumor size and has a low side effect anemia (anemia grade 1).

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