DIFFERENCE OF SGOT AND SGPT LEVEL IN STADIUM IIB-IIIB SQUAMOUS CELL CERVICAL CANCER PATIENTS BEFORE AND AFTER CHEMOTHERAPY AT SANGLAH HOSPITAL DENPASAR

R. Noviyani[1],P.A.Indrayathi[2], I. N. G Budiana[3], K. Suwiyoga [3],K.Tunas [4]
[1]Department of Pharmacy, Faculty of Mathematics and Sciences,
Udayana University,
[2]Department of Public Health, Faculty of Medicine, Udayana University,
[3]Department of Obstetrics and Gynecology, Faculty of Medicine,
Udayana University,
[3]Department of Public Health, Faculty of Health, Science and Technology, Dhyana Pura University
Bali – Indonesia
email : rini.noviyani@gmail.com

ABSTRACT

Objective: Cervical cancer became Indonesia's highest prevalent gynecological cancer in 2013 and the highest prevalent gynecological cancer at Sanglah Hospital.Paclitaxel Carboplatin is one of the regimens used for cervical cancer treatment at Sanglah Hospital, Denpasar. Aside of providing therapeutic effect, this regimen also causes hepatotoxicity. This research was trying to determine the toxic effect of Paclitaxel Carboplatin towards liver function based on the difference of SGOT and SGPT levels before chemotherapy cycle I and after chemotherapy cycle VI. **Method:**This wasa prospective observational research with a study case method conducted from January 2017 until June 2017 at Obstetric Polyclinic of Sanglah Hospital, Denpasar.Samples' SGOT and SGPT level before and after chemotherapy I and VI were recorded and were then analysed with Shapiro-Wilk normality test. If the data were distributed normally, they would undergo tpaired test and Wilcoxon test at 95% confidence level if they were not distributed normally. **Results:** Tenpatients fulfilled the research criteria. There was a meaningless increase for SGOT level (p=0.575) along with a meaningless increase for SGPT level (p=0.074) before and after Paclitaxel Carboplatin chemotherapy cycle I and VI respectively.**Conclusion:** Research of toxic effect from Paclitaxel Carboplatin chemotherapy in 10 squamous cell cervical cancer patients showed a meaningless difference of both SGOT and SGPT level with the value of p>0.05 in stadium IIB-IIIB squamous cell cervical cancer patients before and after Paclitaxel Carboplatin chemotherapy cycle I and VI respectively.

Keywords: Cervical cancer, Chemotherapy, Paclitaxel carboplatin, Liver function

INTRODUCTION

Cervical cancer was the world's fourth highest prevalent cancer among women that recorded 266,000 victims in 2012 [1].In 2013, from the total of 347,792 cancer patients in Indonesia, cervical cancer was in the first place with the record of 98,692 patients compared to breast cancer patients that recorded 61,682 patients [2].Cervical cancer was also the highest prevalent gynecological cancer at Sanglah Hospital and the number has been increasing in the last 2 years. In 2015, from the total of 261 gynecological cancer patients, 200 patients were diagnosed with cervical cancer. In 2016, the number was increasing since out of 419 gynecological cancer patients, 289 of them were cervical cancer patients. It was predicted that the number would increase annually. Based on the data of cervical cancer patients from January 2017 until February 2017, there were 51 cervical cancer patients out of 121 gynecological cancer patients.

Therapy for cervical cancer could be varying from surgery, radiation or chemotherapy with cytotoxic medication [3]. Chemotherapy is one of the opted therapies for advanced stadium and recurring cervical cancer patients [4].One of the most common combined chemotherapies for cervical cancer treatment at Sanglah Hospital, Denpasar is Paclitaxel Carboplatin which is the first line chemotherapy given from 3 until 6 cycles [5].Six cycles of Paclitaxel Carboplatin chemotherapy are more effective in reducing the chance of recurring cancer for cervical cancer patients compared to three cycles of the same chemotherapy[6]. Besides its therapeutic effect, chemotherapy could also cause a toxic effect. This claim was supported by the research of Smith *et al.* (2001) that stated how the toxic effect in blood of lung cancer patients who underwent 6 cycles of combined Mitomycin, Vinblastine, and Cisplatin chemotherapy was higher compared to those who underwent 3 cycles of the same chemotherapy [7].This showed that more cycles of chemotherapy equal to more toxicity.

Paclitaxel Carboplatin regimen chemotherapy has side effects. They may include hepatotoxicity like *hepatic necrosis* (liver damage) and *hepatic encephalopathy* [8].Transaminase biomarkers linked to the cause of both liver cell's damage and toxicity are *Serum Glutamic-Oxaloacetic Transaminase* (SGOT) and *Serum Glutamic-Pyruvic Transaminase* (SGPT) [9]. The level of both SGOT and SGPT are considered abnormal if their value are 2-3 times higher than the normal values [10].

Based on the previous information, a research to monitor and determine the difference of SGOT and SGPT level before and after six cycles of Paclitaxel Carboplatin chemotherapy as liver function's toxicity parameter is necessary for stadium IIB-IIIB squamous cell cervical cancer patients at Sanglah Hospital, Denpasar.

METHODS

This research was conducted prospectively in order to determine the difference of SGOT and SGPT level before and after Paclitaxel Carboplatin chemotherapy cycle I and cycle VI in stadium IIB-IIIB squamous cell cervical cancer patients at Sanglah Hospital. Patients at Sanglah Hospital Denpasar Obstetric Polyclinic were selected through consecutive sampling from January 2017 until June 2017. This research had obtained Ethical Clearance Number1097/UN.14.2/KEP/2017 and research permit Number LB.02.01/XIV.2.2.1/16887/2017 from Litbang Ethical Commission of UNUD Medicine Faculty/ Sanglah Hospital, Denpasar. The inclusion criteria included new patients with stadium IIB-IIIB squamous cell cervical cancer who were willing to participate in the research by signing the informed consent and by providing their SGOT and SGPT laboratory result, as well as patients who could finish the whole cycles of chemotherapy (cycle I until cycle VI). The exclusion criteria included patients whose development couldn't be monitored due to specific reason such as death and lost to-follow-up.

Collected data were then analysed statistically by using SPSS program after undergoing normality test with Shapiro-Wilk to find out the data distribution. Data with normal distribution were analysed with t paired test and those with abnormal distribution were analysed with Wilcoxon test at95% confidence level. Both SGOT and SGPT data were considered to have meaningful difference if the value of $p<0.05$.

RESULTS

Table 1:
Patients' characteristics who underwent paclitaxel carboplatin chemotherapy

Patients' characteristics	Number (N=10)	Percentage (%)
Age (years)		
36-45	1	10
46-55	4	40
56-65	4	40
66-75	1	10
Marital status		
Unmarried	0	0
Married	8	80
Divorced	2	20
Marital age (years)		
15-20	9	90
21-26	1	10
>26	0	0
Education		
Uneducated	0	0
Elementary school	6	60
Middle school	2	20
High school	2	20
Occupation		
Housewives	1	10
Laborers	1	10
Farmers	2	20
Private business owners	1	10
Merchants	2	20
Entrepreneurs	1	10
Private employees	2	20
Origin		
Bali	8	80
Banyuwangi	2	20
Illness' stadium		
IIB	2	20
IIIB	8	80
Medical insurance status		
PBI (government insurance program for disadvantaged people)	3	30
Non-PBI	7	70

Based on Table 1, it could be observed that most patients (7 people) were at stadium IIIB with the majority of patients' age was 46-55 years old and most of their marital age was 15-20 years. Most common educational level of the patients from Bali was elementary school. For occupations, most of the patients were farmers, merchants, and private employees. As for medical insurance, most of them were non-PBI.

Table 2:
Wilcoxon test result for data of SGOT level before paclitaxel carboplatin chemotherapy I and after paclitaxel carboplatin chemotherapy VI

	N[a]	SGOT (U/L)[b]			
		Median	Minimum	Maximum	P[c]
Before chemotherapy I	10	16,6500	10,70	32,30	0,575
After chemotherapy VI	10	16,7500	8,70	58,90	

[a]N = number of samples,[b]SGOT = *Serum Glutamic-Oxaloacetic Transaminase,*[c]P = level of meaningfulness

Based on Table 2, the data showed an increase in SGOT level median values from 16,6500 U/L before chemotherapy cycle I to 16,7500 U/L after chemotherapy cycle VI in squamous cell cervical cancer patients with the value of p=0.575.

Table 3:
Wilcoxon test result for data of SGPT level before paclitaxel carboplatin chemotherapy I and after paclitaxel carboplatin chemotherapy VI

	N[a]	SGPT (U/L)[b]			
		Median	Minimum	Maximum	P[c]
Before chemotherapy I	10	10,0000	6,10	36,80	0,074
After chemotherapy VI	10	18,9000	5,10	64,50	

[a]N = number of samples, [b]SGPT = *Serum Glutamic-Pyruvic Transaminase,* [c]P = level of meaningfulness

Based on Table 3, the data showed an increase in SGPT level median values from 10,0000 U/L before chemotherapy cycle I to 18,9000 U/L after chemotherapy VI in squamous cell cervical cancer patients with the value of p=0.074.

DISCUSSION

Patients' characteristics

Based on Table 1, it was shown that the number of squamous cell cervical cancer patients who underwent treatment at Sanglah Hospital and who fulfilled the inclusion criteria was 10 people. The inclusion criteria were as follows: Most of the patients were at stadium IIIB cervical cancer. Most of the patients were 46-65 years old, and their marital age was mostly 15-20 years. One of the main causes of cervical cancer is sexual coitus at early age [11]. Most of the patients' educational level were elementary school which could be connected to the lack of knowledge about how to do early detection of cervical cancer through Pap smear for instance [12]. As a result, most patients came for treatment with advanced stadium of cervical cancer since there were no obvious symptoms during the early stages and symptoms like abnormal bleeding could only be detected during advanced stadiums [13]. Most of the patients' occupations were farmers, merchants, and private employees. Patients came from Bali and outside Bali with most of them came from Buleleng, Bali. All patients were using medical insurance and most of them were using non-PBI insurance.

Paclitaxel carboplatin toxicity towards liver function

Toxicity towards liver function can be observed with transaminase biomarkers like *Serum Glutamic-Oxaloacetic Transaminase* (SGOT) and*Serum Glutamic-Pyruvic Transaminase* (SGPT)(Sumardjo, 2006). The increase of SGOT and SGPT level of their normal values becomes indicators of liver dysfunctions or failures [10]. SGOT or commonly called as *Aspartate Aminotransferase* (AST) is an enzyme with high metabolism activity in liver cell and will be released to the circulation in the case of the tissue's cell damage or death. SGPT or *Alanin Aminotransferase* (ALT) is also another enzyme in liver cells [14].

The analytical result of the difference in SGOT level from 10 cervical cancer patients before and after Paclitaxel Carboplatin chemotherapy I and VI with Wilcoxon test in Table 2 showed an increase in SGOT level median values from 16,6500 U/L before chemotherapy cycle I to 16,7500 U/L after chemotherapy cycle VI with the p value of 0.575 (p>0.05). This implied that the increase from before and after Palictaxel Carboplatin chemotherapy cycle I and VI was meaningless. The normal value of SGOT level ranges from 5-35 U/L [14].The result of this research showed that the SGOT level median values from before and after Paclitaxel Carboplatin chemotherapy cycle I and VI were still within the normal range.

The analytical result of the difference in SGPT level from 10 cervical cancer patients before and after Paclitaxel Carboplatin chemotherapy I and VI with Wilcoxon test in Table 3 showed an increase in SGPT level median values from 10,0000 U/L

before chemotherapy cycle I to 18,9000 U/L after chemotherapy cycle VI with the p value of 0.074 (p>0.05). This implied that the increase from before and after Palictaxel Carboplatin chemotherapy cycle I and VI was meaningless. The normal value of SGPT level ranges from 5-35 U/L[14].The result of this research showed that the SGPT level median values from before and after Paclitaxel Carboplatin chemotherapy cycle I and VI were still within the normal range.

Toxicity and damage of liver cells will have a direct impact on the increase of transaminase enzymes' level (SGOT and SGPT). The increase of SGOT and SGPT levels up to 2 until 3 times of the normal values showed the occurrence of liver toxicity or damage [10]. According to research by Hruban *et al* (1991) showed how the intake of carboplatin chemotherapy by leukemic patients had led to liver function failures with the symptom of SGOT level increase up to 4690 U/L on the 17th day [15]. The increase of SGOT and SGPT levels in this research was likely caused by Paclitaxel regimen since it might cause *hepatic necrosis* (liver damage) and *hepatic encephalopathy*. Paclitaxel might increase liver metabolism and therefore was not recommended to patients with liver dysfunctions or damages[8].The increase of SGOT and SGPT levels that were both meaningless and were still within the normal range in this research showed that chemotherapy with Paclitaxel Carboplatin regimen did not result in toxicity. However, the use of SGOT and SGPT as hepatotoxicity biomarkers is less applicable because these enzymes also exist in other organs other than liver such as heart, skeletal muscles, kidney, brain, lymph, pancreas, and lungs [14]. The existence of SGOT and SGPT in other organs might show that the increase of these enzymes does not specifically prove of the occurrence of liver toxicity due to Paclitaxel Carboplatin chemotherapy. Nevertheless, SGPT has a higher concentration in the liver which leads to more specific values when it comes to showing liver function's condition compared to SGOT [14] after undergoing Paclitaxel Carboplatin chemotherapy.

CONCLUSION

Research about toxic effect from undergoing Paclitaxel Carboplatin chemotherapy from 10 squamous cell cervical cancer patients showed a meaningless increase in both SGOT and SGPT levels with the values of p>0.05 before and after Paclitaxel Carboplatin chemotherapy I and VI in stadium IIB-IIIB squamous cell cervical cancer patients.

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