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Elective Surgery Service of Oncology Surgery Division Before and During Early Pandemic Era of Corona Virus Disease 19 (COVID-19) in Dr. M. Djamil Hospital Padang

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ABSTRACT

Introduction Corona Virus Disease 19 (COVID-19) infection was first reported in Wuhan, China, in December 2019. The author wants to know how the Oncology Surgery Division elective surgery patient services before and during early pandemic era of COVID-19 at Dr. M Djamil Padang Hospital. Method: This research is a comparative study with a quantitative approach to elective surgery patients in the Oncology Surgery Division before and during early pandemic era of COVID-19 at Dr. M Djamil Padang Hospital. The sampling technique in this study was total sampling. Data analysis will be carried out using statistical analysis in accordance with the existing data scale and using SPSS software. Results: In this study, 137 samples were obtained consisting of 80 samples before the COVID-19 pandemic and 57 samples during early pandemic era of COVID-19. Of the 57 patients who underwent elective surgery from the Surgical Oncology Division during early pandemic era of COVID-19, all patients were not suspicious / confirmed. The time for oncology service assessment was 14.26 days before COVID-19 pandemic and 8.93 days during early pandemic era of COVID-19. Conclusion: More patients who underwent elective surgery in the surgical oncology division were female, both before and during early pandemic era of COVID-19. The mean age of patients before COVID-19 pandemic was 48.72 years and 49.53 years during early pandemic era of COVID-19. There is a disparity between the length of time the assessment of elective surgery patients in the surgical oncology division before and during early pandemic era of COVID-19 pandemic.

1. Introduction

Corona Virus Disease 19 (COVID-19) infection was first reported in Wuhan, China, in December 2019, in a group of individuals with a picture of pneumonia whose etiology is unknown. COVID-19 is spreading rapidly throughout the world.¹ In March 2020, there were reported as many as 90,870 positive cases of COVID-19 worldwide.^{2.3} In Indonesia during March 2020, there were 25,773 confirmed cases of COVID-19 in 30 provinces.⁴ In West Sumatra Province in the period March to June 2020 there were 552 positive cases of COVID-19.^{5,6}

The pathway for the spread of COVID-19 infection is through person-to-person transmission. The virus spreads through droplets that are released when you cough or sneeze. Person-to-person transmission can occur in patients who are symptomatic or asymptomatic.^{2,7,8}

The clinical manifestations of COVID-19 vary from asymptomatic to Acute Respiratory Distress Syndrome (ARDS) which requires aggressive action. Current management strategies involve supportive care and protective measures to prevent further transmission of the virus. Although there has been no reported cure for COVID-19, several trials are underway to determine the most appropriate treatment regimen. ^{2,7-9}

Immunosuppressive conditions in cancer patients either due to their disease or due to treatment make cancer patients more susceptible to COVID-19 infection. (10) Research in China shows cancer patients infected with COVID-19 have a 3.5 times risk of getting mechanical ventilation assistance or entering the ICU compared to with the general population. In addition, limited resources in outpatient settings, including administrative and specialist staff, have hindered the routine care of these patients¹¹

A study conducted by Liang et al (2020), found that patients with cancer may have a higher risk of developing COVID-19 than individuals without cancer.10,12 By age, cancer patients are older (the average age of cancer diagnosis is 66 years. in the United States) and have higher ACE-2 expression (ACE-2 tends to increase with age) and more comorbidities with a higher risk of outcome when infected with COVID-19. In addition, data from this study also shows that cancer patients with COVID-19 have a worse prognosis.¹⁰

The condition of the COVID-19 pandemic has led to changes in services for cancer patients. On the one hand, health workers are trying to minimize patient visits to health facilities during the pandemic, considering that cancer patients are at high risk of being infected with COVID-19. On the other hand, patients need oncology services to overcome the progression of their cancer.13 From a study conducted by Bleicher et al (2017), which assessed the time interval between breast cancer diagnosis and surgery, showed a decrease in overall survival with increasing time intervals required for surgical intervention.¹⁴ A study conducted by Khorana et al (2019) showed that prolonging the time it takes from solid cancer diagnosed to receiving therapy increases the risk of patient mortality by 1.23.2% per week.15 Surgeons must be able to weigh diagnostic tests and procedures. which therapeutics can be delayed or canceled, and which ones should continue. All of course taking into account the risks and benefits for doctors and patients¹³

This study aims to determine the services of elective surgery patients in the Surgical Oncology Division before and during the early phases of the COVID-19 pandemic at Dr. M. Djamil Padang.

2. Methods

This research is a comparative study with a quantitative approach to elective surgery patients in the Surgical Oncology Division before and during the COVID-19 pandemic at Dr. M. Djamil Padang. The population of this study were all elective surgery patients of the Surgical Oncology Division Dr. M Djamil Padang in the period March - June 2019 and the period March - June 2020. The sampling technique in this study was total sampling. In total sampling, the number of samples studied is the same as the population. Data were collected retrospectively from the medical records of Dr. M Djamil Padang. The collected data will be edited, coded, and entered as written in the operational definition. Data analysis will be carried out using Chi-square analysis, independent statistical t-test and Mann-Whitney test according to the existing data scale and using SPSS software.

3. Results

Sample characteristics

The results of the study were obtained after collecting data on elective surgery patients from the Surgical Oncology Division for the period March-June 2019 and the period March-June 2020 from the status of medical records. In this study, 137 samples were obtained consisting of 80 samples before the COVID-19 pandemic and 57 samples during the initial phase of the COVID-19 pandemic. Of the 57 patients who underwent elective surgery by the Surgical Oncology Division during the initial phase of COVID-19, all of the patients had COVID-19 status as non-ODP / PDP.

Based on table 1, it is found that there are 95 female patients (69.3%) more than the male gender 42 people (30.7%) who underwent elective surgery in the Surgical Oncology Division. In the period before the COVID-19 pandemic, the number of female patients was 54 (39.4%). This number decreased during the initial phase of the COVID-19 pandemic to 41 people (29.9%). Meanwhile, the number of male patients before the COVID-19 pandemic as many as 26 people (19.0%) also decreased during the initial phase of the COVID-19 pandemic to 16 people (11.7%).

In this study, the mean age of the patients was 48.72 years. Meanwhile, the average age of patients during the initial phase of the COVID-19 pandemic was 49.53 years. Of the 80 patients who underwent surgery in the period before COVID-19, 31 (22.6%) had comorbid diseases. Meanwhile, during the initial phase of the COVID-19 pandemic, 15 people (10.9%) had comorbid diseases. There were 49 patients who did not have comorbid diseases in the period before COVID-19 (35.8%) and 42 people in the period during COVID-19 (46.2%).

The number of elective surgery cases of the Surgical Oncology Division in the early phase of the COVID-19 pandemic decreased compared to before the COVID-19 pandemic. From Figure 51 it is known that in the period before COVID-19 the most cases were thyroid with 24 people (17.5%). The next most cases were mammae 20 people (14.6%), sarcoma 16 people (11.7%), head and neck 11 people (8.0%) and the lowest skin cases were 9 people (6.6%).

Meanwhile, during the initial phase of the COVID-19 pandemic, the most cases were 15 people (10.9%). The early stage was the largest stage of the disease that underwent elective surgery in the period before COVID-19 with 32 people (23.4%), while during the early phase of

the COVID-19 pandemic more advanced stage patients were operated on, namely 25 people (18.2%) .

The length of operation was less than two hours in the period before COVID-19 was 29 people (21.2%). This number decreased during the initial phase of the COVID-19 pandemic by 12 people (8.8%). The same thing happened to the operation time of more than two hours

The average length of time for the assessment period before COVID-19 was 14.26 days. Meanwhile, during the initial phase of the COVID-19 pandemic it was 8.93 days. Meanwhile, the average queue length is 10.55 days for the period before COVID-19. Meanwhile, during the initial phase of the COVID-19 pandemic it was 8.98 days.

The waiting time for surgery which was less than 48 hours was 49 people (35.8%) in the period before COVID-19 and 43 people (31.4%) during the initial phase of the COVID-19 pandemic. Meanwhile, the waiting time for surgery which was more than 48 hours in the period before COVID-19 was 31 people (22.6%) and during the initial phase of the COVID-19 pandemic as many as 14 people (10.2%).

The length of stay of patients according to the PPK in the period before COVID-19, as many as 54 people (39.4%) decreased during the initial phase of the COVID-19 pandemic to 39 people (28.5%). Meanwhile, the length of stay of patients who did not comply with the PPK in the period before COVID-19 was 26 people (19.0%) and during the initial phase of the COVID-19 pandemic was 18 people (13.1%)

Bivariate analysis

Bivariate analysis was performed on the independent variables using the Chi-square statistical test, independent t-test and Mann-Whitney test.

Based on table 2, the p value = 0.182. Thus, it can be concluded that there is no significant

difference between comorbid diseases before and during the initial phase of COVID-19.

Based on table 3, the value of p = 0.084 is obtained. This value indicates that there is no significant difference between the length of operation in the period before and during the initial phase of the COVID-19 pandemic.

Based on table 4, the p value = 0.001 is obtained. This value indicates that there is a significant difference between the length of the assessment time in the period before and during the initial phase of the COVID-19 pandemic.

Based on table 5, the p value is = 0.337. This

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value shows that there is no significant difference in queuing time before and during the initial phase of the COVID-19 pandemic.

Based on table 6, the p value = 0.119. This means that there is no significant difference in the waiting time for operations before and during the initial phase of the COVID-19 pandemic.

Based on table 7, the p value = 1,000. This value indicates that there is no significant difference in the length of stay for surgery before and during the initial phase of the COVID-19 pandemic

		Category				
Characteristics		Before COVID- 19 f (%)	The initial phase of COVID-19 f (%)	Total f (%)		
Age	Average Age	48.72	49.53	-		
Gender	Man	26 (19.0)	16 (11.7)	42 (30.7)		
	Women	54 (39.4)	41 (29.9)	95 (69.3)		
Comorbid	There is	31 (22.6)	15 (10.9)	46 (33.6)		
	There is no	49 (35.8)	42 (46.2)	91 (66.4)		
Disease Stage	Benign	17 (12.4)	9 (6.6)	26 (19.0)		
	maglinant Early	32 (23.4)	23 (16.8)	55 (40.1)		
	Continue	31 (22.6)	25 (18.2)	56 (40.9)		
Operation Time	≤ 2 hours	29 (21.2)	12 (8.8)	41 (29.9)		
	> 2 hours	51 (37.2)	45 (32.8)	96 (70.1)		
Length of Assessment Time	Average Length of Assessment Time	14.26	8.93	-		
Long Queue Time	Average Queuing Time	10.55	8.98	-		
Length of Operation	≤ 48 hours	49 (35.8)	43 (31.4)	92 (67.2)		
Waiting Time	> 48 hours	31(22.6)	14(10.2)	45 (32.8)		
Length of Treatment	In accordance with the PPK	54 (39.4)	39 (28.5)	93 (67.9)		
	Not in accordance with the PPK	26 (19.0)	18 (13.1)	44 (32.1)		

Table 1. Sample Characteristics



Figure 1. Characteristics of Elective Surgical Diseases in the Surgical Oncology Division

	Category					4-1		
Comorbid	Before C	ovid-19	During C	ovid-19	10	P value		
-	f	%	f	%	f	%	_	
Yes	31	22.6	15	10.9	46	33.6		
No	49	35.8	42	46.2	91	66.4	0.182	
Total	80	58.4	57	41.6	137	100	-	

Table	2.	Bivariate	Analysis	of Comorbid	Diseases
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Table 3. Bivariate Analysis of Length of Operation

		Cate	egory		m -		
Length of	Before C	ovid-19	During C	Covid-19	- 10	P value	
Operation _	f	%	f	%	f	%	
≤ 2 hours	29	21.2	12	8.8	41	29.9	
> 2 hours	51	37.2	45	32.8	96	70.1	0.084
Total	80	58.4	57	41.6	137	100	_

Table 4. Bivariate analysis of assessment time

Category	N	Mean	Std. deviation	P value	
Before covid-19	80	14.26	10.613	0.001	
During covid-19	57	8.93	6.265	0.001	

Category	N	Mean	Std. deviation	P value
Before covid-19	80	10.55	9.343	0.227
During covid-19	57	8.98	9.439	0.337

Table	5.	Bivariate	analysis	of	queuing	time
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Table 6. Bivariate	analysis	of	operation	waiting	time
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Length of		σ.						
operation -	Before Covid-19 Du			g Covid-19			P value	
time	f	%	f	%	f	%	-	
\leq 48 hours	49	35.8	43	31.4	92	67.2		
> 48 hours	31	22.6	14	10.2	45	32.8	0.119	
Total	80	58.4	57	41.6	137	100	-	

4. Discussion

In this study, there were 137 total patients who underwent elective surgery, Dr. M. Djamil Padang in the period March - June 2019 (Before the COVID-19 Pandemic) and the period March -June 2020 (during the initial phase of the COVID-19 pandemic). There were 80 patients who underwent elective surgery before the COVID-19 pandemic and 57 people during the initial phase of the COVID-19 pandemic. At the time of the COVID-19 pandemic, 57 patients who underwent elective surgery from the Surgical Oncology Division were patients with COVID-19 status instead of PDP, ODP / OTG and were treated in the usual ward or green zone.³⁸

The decrease in the number of elective operations during the initial phase of the COVID-19 pandemic compared to before the COVID-19 pandemic can occur due to anxiety and fear in the general public since WHO declared this new disease outbreak to be a pandemic.³⁹ In an effort to reduce the spread of the disease, the community especially high-risk populations, are encouraged to stay at home, including not going to hospital. PERABOI has also established and urged surgeons to implement a triage system for oncology cases with the aim of minimizing cancer patient visits to the hospital. ^{13,40} The number of female patients is more than male patients, with a total number of female patients is 95 people (69.3%) and male patients 42 people (30.7%). Before COVID-19 the number of female patients was 54 (39.4%) and 26 male patients (19.0%) while during the initial phase of COVID-19 the number of female patients was 41 people (29.9%) and 16 male patients (11.7%). This is in line with research conducted by Nugraheni, C (2015) at the hospital. Hasan Sadikin Bandung, where the number of patients who came to the Polyclinic Surgical Oncology was more female than male patients, while 11 male patients.⁴¹

The average age of patients in the Surgical Oncology Division who underwent elective surgery before COVID-19 was 48.72 years out of 80 patients, while during COVID-19 it was 49.53 years out of 57 patients. In other words, the average age of patients who come is 49-50 years, this is in line with data from the study of Vijaykumar et al, (2021) that in the Kerala cancer center, India, the average breast cancer sufferer is 53-54 years, the Ministry of Agriculture. Health in 2019 also stated that the average age of oncology patients is 30-50 years, and oncology patients are in hospital. Hasan Sadikin Bandung

also ranges from 36-50 years. (41,42)

There were 31 patients in the Surgical Oncology Division who had comorbid diseases and underwent elective surgery in the period before COVID-19 (22.6%). Whereas in the period during the initial phase of the COVID-19 people pandemic, 15 (10.9%) had comorbid diseases. There were 49 patients who did not have comorbid diseases in the period before COVID-19 (35.8%) and 42 people in the period during COVID-19 (46.2%). The comorbid diseases suffered by patients are Diabetes Mellitus, Hypertension, Asthma, and Cardiovascular diseases.

The type of disease that was operated on before COVID-19 was thyroid with 24 people (17.5%). The next most cases were mammae 20 people (14.6%), sarcoma 16 people (11.7%), head and neck 11 people (8.0%) and the lowest skin cases were 9 people (6.6%). Meanwhile, during the initial phase of COVID-19, the most cases were 15 mothers (10.9%). Furthermore, the highest order of cases during the initial phase of the COVID-19 pandemic was thyroid 13 people (9.5%), head and neck 12 people (8.8%), sarcoma 10 people (7.3%) and the least was skin cases with 7 people (5.1%). Based on research from the Indonesia Cancer Care Community. breast oncology cases were the largest, namely 58.256 people from a total sample of 348.809 people. From the data released by GLOBOCAN in 2018, the number of patients suffering from breast disease was 58.256 people, where the average age of patients suffering from breast disease was 50 years, namely 8,788 people.^{17,19}

In the early phase of the COVID-19 pandemic, the most types of disease that were operated on were no longer the thyroid case, but the breast case. This happened because of the implementation of the patient triage system, such as the appeal from PERABOI. Thyroid cases are a disease whose progression tends to be slow so that it is included in priority B. In contrast, the case of breastfeeding is a disease with fast progression so that it is classified as priority A and many were operated on during the COVID-19 pandemic.

In the period before COVID-19, the early stage was the most disease stage that underwent elective surgery with 32 people (23.4%). After that, it was followed by an advanced stage with 31 people (22.6%) and benign cases with 17 people (12.4%). Unlike the period before COVID-19, in the early phases of the COVID-19 pandemic, 25 patients (18.2%) operated on at an advanced stage. Early stage was the second highest with 23 people (16.8%) and the lowest was benign cases with 9 people (6.6%). During COVID-19, the least operation is in benign cases, this can also happen due to the appeal from PERABOI to apply priority treatment to patients based on a triage system. 19 because of the patient's fear of coming to health services for fear of contracting COVID-19. As a result, only advanced stage patients with increasing complaints came to community services

Based on research data, it was found that the length of operation of less than two hours in the period before COVID-19 was 29 people (21.2%). This number decreased in the period during the initial phase of the COVID-19 pandemic by 12 people (8.8%). The same thing happened to the operation time of more than two hours. In the COVID-19, period before the number of operations that lasted more than two hours was 51 people (37.2%). Meanwhile, during the initial phase of the COVID-19 pandemic it decreased to 45 people (32.8%). Operation time is the time required by a surgeon to perform an operation on a patient.

The average assessment time before COVID-19 was 14.26 days and during the COVID-19 pandemic was 8.93 days. The time to assess the patient during the period during COVID-19 was shorter. The assessment time starts when the patient first registers at the polyclinic until the patient receives a letter of care for surgery. The assessment time is strongly influenced by the preoperative service flow, which includes supporting checks and preparation for operations.

The average queue time before the COVID-19 pandemic was 10.55 days and in the initial phase of the COVID-19 pandemic, 8.98 days. Queue time is influenced by the number of patients and existing infrastructure. The more the number of patients, the longer the queue will be. Ideally, the queue time should not cause delays in patients receiving therapy, especially cancer patients.

Prior to the pandemic, the length of waiting time for operations of less than 48 hours was 49 people (35.8%) in the period before COVID-19 and 43 people (31.4%) in the period during COVID-19. Meanwhile, the waiting time for surgery which was more than 48 hours in the period before COVID-19 was 31 people (22.6%) and in the period during COVID-19 there were 14 people (10.2%). The waiting time for elective surgery according to Kepmenkes No. 129 of 2008 as stated in the SNARS is a grace period starting from the doctor deciding the planned operation until the operation begins. The standard of waiting time for elective surgery based on the minimum hospital service standard is ≤ 2 days.

The length of stay of patients according to the PPK in the period before COVID-19 was 54 people (39.4%) and during the initial phase of COVID-19 to 39 people (28.5%). Overall, the length of stay in accordance with the PPK was 67.9%. Ideally, the length of stay for patients is in accordance with PPK because if it is not suitable or prolonged it will increase the patient's exposure to infection in the hospital and will increase the burden on the hospital itself.

Comparisons before and during the early phases of the covid-19 pandemic

After conducting a bivariate analysis, it was found that during the initial phase of COVID-19 the number of patients who had comorbid diseases was less than before COVID-19, although statistically there was no significant difference with p value = 0.182. Comorbid diseases tend to increase the risk of health problems in patients, thus hindering the healing process. Cancer patients who tend to experience immunosuppression are more susceptible to COVID-19 infection and if accompanied by comorbid diseases, the prognosis will be worse. Therefore, the authors assume that the decrease in the number of patients who have comorbids in the early phases of the COVID-19 pandemic can occur due to the anxiety of patients who have comorbid diseases to come to the hospital.39

In terms of length of operation, there was no significant difference between the period before the COVID-19 pandemic and the early phase of the COVID-19 pandemic with a p value of 0.084. The authors assume this happened because all patients who were operated on during COVID-19 were patients in the non-PDP, ODP / OTG category. Screening is carried out in polyclinics in the early phases of the COVID-19 pandemic. Meanwhile, the yellow zone treatment room is not yet available. In other words, the patient's condition between before and during the initial phase of the COVID-19 pandemic was the same, that is, they were both from the usual ward or green zone. Therefore, the problem of the risk of COVID-19 during transmission of surgical procedures, from patient to doctor or operating room staff, does not occur.11,13

There was a significant difference in the length of time for the assessment of patients between the period before the COVID-19 pandemic and during the early phase of the COVID-19 pandemic with a value of p = 0.001. In this study, it was found that the assessment time during the initial phase of the COVID-19 pandemic was shorter. This could occur due to the decrease in the number of patients during the COVID-19 pandemic at Dr M Djamil General Hospital including the Surgical Oncology Division. The decreasing number of patients will cut the queue time for investigations so that the assessment will also be faster.

In addition, since the stipulation of Dr. Djamil as a COVID-19 referral hospital in West Sumatra, the board of directors immediately responded by implementing a risk management policy and continuing to carry out regular monitoring and evaluation. The policies made in the early phases of the COVID-19 pandemic were still adaptive because there was no ideal service pattern during the COVID-19 pandemic. One of the policies is to create a patient service flow during the COVID-19 pandemic. Although the flow of patient care cannot be fully implemented due to lack of facilities and infrastructure, with monitoring and evaluation of risk management carried out by the board of directors of Dr M Djamil Hospital, patient services can run safely and effectively.

In terms of queuing time for patients, there was no significant difference between the preand early phases of the COVID-19 pandemic with a p = 0.337. The authors assume this is because the number of patients during the initial phase of the COVID-19 pandemic was less than before the COVID-19 pandemic, this was influenced by public anxiety and fear, as well as calls to stay at home, and including not coming to the hospital. 39,40) In addition, doctors are more selective in determining prospective patients to be operated on by applying a triage system. Patients who entered priority groups B and C will be postponed surgery according to PERABOI guidelines¹³

There was no significant difference in the waiting time for operations between the period before the COVID-19 pandemic and during the initial phase of the COVID-19 pandemic with a value of p = 0.119. This happened because there was no yellow zone treatment room in the early phase of the COVID-19 pandemic so there was no PCR examination in the treatment room. In the early phase of the COVID-19 pandemic, all patients who will be admitted to care will undergo screening at the polyclinic. Patients who are allowed to enter the ward are patients with non-PDP / ODP / OTG status so that all patients enter the normal ward. Therefore the waiting time for

operations will be relatively the same between before and during the initial phase of the COVID-19 pandemic. In addition, the operation room service of Dr M Djamil Hospital continues to be effective despite facing several obstacles such as limited manpower and PPE.

In terms of length of stay, there was no significant difference between the period before and during the initial phase of the COVID-19 pandemic with a value of p = 1.000. this happens because the flow of patient care during the pandemic has not been fully implemented. Screening of patients was carried out at the polyclinic because the yellow zone treatment room did not yet exist. All patients who were operated on were treated in a green zone room so that there was no additional flow.38-40 Therefore the length of patient stay did not differ between the period before and during the initial phase of the COVID-19 pandemic. So in this case the service of the RSUP Oncology Division. Dr. M. Djamil Padang is in accordance with the minimum hospital service standards even though he is facing the COVID-19 pandemic.

- 5. Ethical Clearance -
- 6. Conflict of Interest -
- 7. Funding / Funding -

8. Author Contributions

Maisa Fitra was responsible for data collection, research administration and writing the original draft. Wirsma Arif Harahap and Yevri Zulfiqar were responsible for statistical analysis and writing the original draft. All authors have reviewed the latest version of the manuscript.

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