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OVERVIEW OF INDICATION FOR POSTOPERATIVE SCOLIOSIS PATIENTS IN THE INTENSIVE CARE UNIT (ICU) ORTOPEDIC HOSPITAL PROF. DR. R. SOEHARSO SURAKARTA

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ABSTRACT

ICU is a part of an independent hospital (installation under the director of medical services), with specialized staff and specialized equipment dedicated to the observation, treatment and therapy of patients suffering from life-threatening diseases, injuries or complications. potential life threatening with dubia prognosis (Kemenkes RI, Indonesian Health Ministry, 2010). According to the Intensive Room Service Guidelines (2019) the indication for ICU admission at Orthopedic Hospital. Prof. Dr. R. Soeharso is a priority model, consisting of priorities 1 to priorities 4. According to Drajat (2010) scoliosis is a disorder that causes an abnormal curve of the spine / bone. Based on the classification, the type of research to be conducted is a retrospective descriptive study. This is because trying to explain accurately, noting phenomena that arise, and this research is also interpreted as an investigation using the method of observation with the observed subjects is to look at past circumstances. Using total sampling technique in sampling, the population is medical records of patients treated in the ICU with a diagnosis of postoperative scoliosis, the number of samples is 52 patient medical records. The instruments in this study use the checklist sheet, while the observed variables are: overview of indication and postoperative scoliosis. Based on this study, the following results were obtained: the most respondents were women (86.5%), the ratio of women and men was 6.2: 1, the average age of the respondents was 17 years, the education of the most respondents was high school (57.7%). Most ICU admission criteria are priority 2, namely after major surgery. The most common type of scoliosis is idiopathic scoliosis (76.9%) with AIS number (99%). The average degree of the curve was 61.9 °, the spirometric results for the degree of restriction were moderate (50). The average length of operation was 4 hours 17 minutes, the average amount of bleeding was 700-1500 ml, the average decrease in postoperative hemoglobin was 3.19 g / dL, the patients were given blood transfusions (92.3%) with an average of 2.4 bags per patient. Use of a ventilator (25%) with an average time of using the ventilator 7 hours 36 minutes.

Key words: Indication for ICU admission, Postoperative scoliosis

INTRODUCTION

Health services are efforts made by an organization to maintain, improve, prevent, treat and restore health for individuals, families or communities. Quality services are services that can satisfy every user of health services by providing health services in accordance with the code of ethics and service standards that have been set.

Orthopedic Hospital. Prof. Dr. R. Soeharso as the provider of public health services always improves the quality of services in all aspects including Intensive Care Installation services. The availability of intensive care unit (ICU) room services is very important for type A hospitals. The prime service program being promoted at this time must be in line with efficiency programs, therefore patients who enter the ICU must strictly comply with the guidelines for ICU admission indications so that services are appropriate and accurate so that the large service costs according to the indication. Orthopedic Hospital. Prof. Dr. R. Soeharso, Surakarta, as a referral center for orthopedic and traumatology cases, always improves the quality of surgical services, especially orthopedic spine surgery, especially scoliosis surgery services. Given that scoliosis surgery is one of the operations that most often requires ICU care, requires high costs, special tools, and special staff, therefore it requires proper care in the postoperative management of scoliosis.

In 2019, a study was conducted on the indications for patients to enter the ICU at Orthopedic Hospital. Prof. Dr. R. Soeharso Surakarta, in this study, the most

orthopedic cases that entered the ICU were spine cases as much as 66.67%, (Yuniarta et al, 2019). Based on hospital medical record data. Orthopedic Hospital Prof. Dr. R. Soeharso Surakarta in 2019 the number of spine surgeries was 479 patients, and of these 63 patients were postoperative scoliosis treated in the ICU, of these 63 patients 18 patients (31.6%) were on a ventilator, out of a total of 57 patients on a ventilator. above, the researchers are interested in conducting a study on the description of the indication for admission of postoperative scoliosis patients in the ICU Orthopedic Hospital Prof. DR.R.Soeharso Surakarta.

METHODOLOGY

Based on the classification, the type of research to be carried out is a retrospective descriptive study. This is because trying to explain accurately, noting the phenomena that arise, and this research is also interpreted as an investigation using the method of observation with the subject being observed by looking at the past. Using a cross-sectional study design, namely an observational study where the data collection of the independent and dependent variables was carried out once at the same time. Of course, not all subjects must be examined on the same day or time, but both the independent and dependent variables are assessed only once. These risk factors and effects were measured according to their condition or status at the time of observation, so there was no follow-up or follow-up (Sastroasmoro and Ismael, 2016).

RESULTS AND DISCUSSION

The following are the results of the research and discussion

Characteristics of Respondents

a. Age

Table 4.1 Age characteristics

Age	Frequency	Percentage
6-11 Years	5	9.6
12-16 Years	26	50
17-25 Years	18	34.6
26-35 Years	3	5.8
Total (n).	52	100

Based on the results of our research, we found that the majority of respondents were 12-16 years old as many as 26 respondents (50%), most were 16 years old with 12 respondents (23.1%), the youngest 10 years old and the oldest 30 years old. with the results of research by Gatam et al (2006) which states that the most scoliosis

sufferers are women who were 14 years old at the time of surgery. Researchers have the opinion that this could be due to the age of 16 years, the bones begin to mature so that it is difficult to perform conservative measures, so surgery is performed at that age.

b. Gender

Table 4.2. Gender characteristics

Gender	Frequency	Percentage
Laki laki (Male)	7	13.5
Perempuan(Female)	45	86.5
Total(n)	52	100

Based on this study, it was found that the sex of the respondents was more female than male, 45 women (86.5%) and 7 men (13.5%). The results above are in accordance with the results of research by Gatam et al. (2006) which states that the most scoliosis sufferers are women, namely

87.1% of the total 621 AIS patients studied. This research assumes that the strength of the bone structure of women is lower than that of men so that women suffer more scoliosis and the degree of curvature increases faster.

c. Educational Stage

Table 4.3 Characteristics of the educational stage

educational stage	Frequency	Percentage
primary school	7	13.5
Junior High school	12	23.1
High school	30	57.7
Bachelor degree	3	5.8
Total(n)	52	100

Berdasarkan hasil penelitian dapat diketahui bahwa responden yang berpendidikan SMA sebanyak 30 responden (57.7%), pendidikan terendah adalah SD sebanyak 7 responden (13.5%), tertinggi S1 sebanyak 3 responden (5.8%) hal ini tidak sesuai dengan hasil penelitian Gatam dkk (2006) yang menyatakan

bahwa penderita scoliosis terbanyak adalah usia 14 tahun yang di dalam jenjang pendidikan adalah pendidikan pertama. Dalam hal ini peneliti berpendapat bahwa tingkat pendidikan responden adalah sesuai dengan usianya, yang rata – rata berusia 16 tahun, itu setara dengan pendidikan SMA.

ICU entry criteria

Table 4.4 ICU entry criteria

ICU entry criteria	Frequency	Percentage
Priority 1	13	25
Priority 2	39	75
Total(n)	52	100

The most ICU entry criteria in this study are priority 2, which is 75%, this is not in accordance with the research of Yuniarta et al. (2019) which states that the criteria for ICU entry at Orthopedic Hospital Prof. Dr. R. Soeharso is priority 1 which is 68% and priority 2 is (29%). In this case the researcher has the

assumption that postoperative scoliosis patients who enter the ICU based on the priority model, the most are priority 2, where it is explained that one of the criteria is post major surgery, because scoliosis surgery is a major type of surgery which requires a long time in surgery so enter priority 2

a. Priority 1

Table 4.5 Priority 1

Priority 1	Frequency	Percentage(%)
Postoperative ventilation is required	13	100
Total(n)	13	100

Based on the results of this study, the results obtained from priority 1, as many as 13 respondents (100%) were postoperative patients who still needed ventilatory support. This result is not in accordance with the results of research by Yuniarta et al. (2019) which states that 68% of respondents who enter with priority 1, with

the most cases are spines (64.29%). In this case the researcher believes that scoliosis surgery is an operation that manipulates the thoracic which is at risk of causing respiratory complications, so it must receive intensive care and ventilation assistance to prevent further postoperative complications..

b. Priority 2

Table 4.6. Priority 2

Priority 2	Frequency	Percentage(%)
Post major surgery	39	100
Total(n)	39	100

Based on the results of this study, the results of the indication for priority 2 entry were 39, and all of them were post major surgery, namely 39 respondents (100%). This result is not in accordance with the results of research by Yuniarta et al (2019) which stated that respondents who entered with

priority 2 were (29%). Types of spine cases occupy the highest total, namely 9 respondents from a total of 12 patients (75%). In this case, the researchers argue that scoliosis surgery is an operation that is classified as a major operation because it takes a long time with a big risk.

Postoperative Scoliosis

a. Types of scoliosis

Table 4.7. Types of scoliosis

Types of scoliosis	Frequency	Percentage
Congenital	3	5.8
Idiopathic	40	76.9
Neuromusculair	9	17.3
Total(n)	52	100

Based on the data of this study, it was found that the most types of scoliosis were idiopathic scoliosis, as many as 40 respondents (76.9%), of the 40 respondents idiopathic scoliosis, 36 respondents (90%) Adolescent Idiopathic Scoliosis (AIS), while 4 respondents (10%) were the type juvenile idiopathic scoliosis. This is in accordance with the opinion of Mujianto (2013) which

states that 80 - 85 cases of scoliosis are a type of idiopathic scoliosis found at puberty. Meanwhile, researchers have the opinion that this type of idiopathic scoliosis arises during the human development period which has many years, at that time all the spinal structures are still growing so that if there is an abnormality or bending, the progress is faster.

b. Curve Degrees

Table 4.8. Curve degree

Curve degree	Frequency	Percentage
< 40	9	17.3
40-60	17	32.7
61-80	18	34.6
> 80	8	15.4
Total(n)	52	100

Based on the data of this research, it was found that the average results of respondents who had scoliosis surgery had a degree of curve (61.9 terkecil), the smallest curve was <40total, a total of 9 respondents (17.3%), while curves 40° - 60°, a total of 17 respondents (32.7 %), the largest number is curve 61° - 80°, a total of 18 respondents (34.6%) and for the degree

of curve > 80° a total of 8 respondents (15.4%). This result is in accordance with research from H Baedlowi (2015) which states that patients who undergo scoliosis surgery have an average angle size (51°) for men and (59.72°) for women. In this case the researcher assumes that the degree of the curve is very influential on the operative therapy of scoliosis, the

greater the degree of the curve the more risk of complications, so what is an indication for operative action on scoliosis

is the degree of the curve and the complications it causes

c. Spirometry results

Table 4.9. Spirometry Results

Spirometry Results	Frequency	Percentage
Normal restrictions	3	5.8
Light restrictions	3	5.8
Moderate restrictions	26	50
Heavy restrictions	13	25
Not recorded	7	13.5
Total(n)	52	100

Based on the data obtained in the study on spirometric examination for the degree of lung restriction, the results were: normal and mild restriction 3 respondents each

(5.8%), moderate restriction a total of 26 respondents (50%), severe restriction a total of 13 respondents (25%) and 7 respondents (13.5%) were not examined.

d. Length of operation

Table 4.10. Length of operation

Length of operation	Frequency	Percentage
<180 minute	9	17.3
180 – 240 minute	18	34.6
241– 300 minute	14	26.9
301– 360 minute	9	17.3
>360 minute	2	3.8
Total(n)	52	100

Based on the results of this study, the results of the duration of scoliosis surgery were 3 - 4 hours, namely 18 respondents (36.4%), while the fastest operation time was 1 hour 30 minutes, the longest operation was 7 hours, while the average scoliosis surgery time was 4 hours. 17 minutes. These results are consistent with the UCSF statement

(2020) which states that spinal fusion surgery takes 4 to 6 hours but the time varies per patient. In this case the researcher has the opinion that scoliosis surgery is an operation that has a big risk such as paralysis, so it requires careful action so that it takes longer than other operations.

e. Total Bleeding

Table 4.11. Total bleeding

Total bleeding	Frequency	Percentage
< 750 ml	16	30.8
750-1500 ml	20	38.5
1501-2000 ml	5	9.6
>2000 ml	2	3.8
Not recorded	9	17.3
Total(n)	52	100

Based on the results of this study, the highest total scoliosis intraoperative bleeding was 750 - 1500 ml, a total of 20 respondents (38.5%). This result is consistent with the statement of Chao Li et al (2015) which states that intra-operative blood loss (IOBL) ranges from 750 to 1500 ml in deformity correction surgery with spinal fusion insertion. In this case the researcher has the opinion that intraoperative bleeding is influenced by many factors,

including the length of the surgical wound incision so that many blood vessels are cut during surgery. In this study, it was found that the results of bleeding were at least 200 ml by 2 respondents, the most bleeding was 3000 ml by 1 respondent, while the total bleeding that was not recorded in the operation report was 9 respondents (17.3%) the average total bleeding was 2520 ml

f. Preoperative Hb levels

Table 4.12. Preoperative Hb levels

Preoperative Hb levels	Frequency	Percentage
< 11 g/dl	3	5.8
11 – 13 g/dl	21	40.4
>13 g/dl	28	53.8
Total(n)	52	100

Based on the results of this study, it was found that the highest total preoperative scoliosis Hb levels were > 13 g / dL as many as 28 respondents (53.8%). This is consistent with research from Muthian et al (2018) which stated that the preoperative scoliosis Hb level was 13.1 g / dL. In this

case the researcher has the opinion that the preoperative scoliosis Hb level should be normal because this operation stings the risk of a lot of intra-operative bleeding. Another result of this study is the highest Hb level is 15 g / dL by 4 respondents (7.7%), the lowest Hb level is 10.6 g / dL.

g. Postoperative Hb levels

Table 4.13. Postoperative hemoglobin levels

Postoperative Hb levels	Frequency	Percentage
< 6.5 g/dl	1	1.9
6.5 – 7.9 g/dl	5	9.6
8.0 – 9.4 g/dl	14	26.9
9.5 – 11g/dl	24	46.2
>11 g/dl	8	15.4
Total(n)	52	100

Based on the results of this study, it was found that the highest total postoperative scoliosis Hb levels were 9.5 - 11 g / dL, namely a total of 24 respondents (46.2%) with an average of 9.8 g / dL. This is not in accordance with research from Nissen et al. (2017) which stated that the average

Hb level after scoliosis surgery was 8.9 g / dL. In this case the researcher has the opinion that postoperative scoliosis Hb levels decrease due to intraoperative bleeding. Another result of this study was the highest preoperative Hb level was 14.6 g / dL for 1 respondent (1.9%), the lowest

Hb level was 5.6 g / dL by 1 respondent (1.9%).

Decrease in Hb Levels

Table 4.14. Decreased levels of Hb

Decrease in Hb Levels	Frequency	Percentage
< 2 g/dL	14	26.9
2– 4 g/dL	23	44.2
4.1 – 6 g/dL	11	21.2
> 6 g/dL	4	7.7
Total(n)	52	100

Based on the results of this study, the total decrease in Hb levels after scoliosis surgery was 4.1 - 6 g / dL, which was 23 respondents or (44.2%). This result is in accordance with the statement of Popta et al (2014) which states that the decrease in Hb levels after scoliosis surgery is 4.1 g / dL. This is also in accordance with research from Muthian et al. (2018) which stated that the average preoperative scoliosis Hb

level was 13.1 g / dL and the average postoperative Hb was 8.9 g / dL or an average decrease of 4.2 g / dL. In this case the researcher has the opinion that the decrease in Hb levels is greatly influenced by the total intra-operative bleeding. Another result of the largest reduction in Hb levels is 8 g / dL, the smallest decrease is 0.1 g / dL

h. Administration of Blood Transfusions

Table 4.15. Give blood transfusions

Give blood transfusions	Frequency	Percentage
transfusions	48	92.3
Not. Transfusion	4	7.7
Total(n)	52	100

Based on the results of this study, the total number of respondents who received blood transfusions was 48 respondents (92.3%) from a total of 52 respondents. This result is not in accordance with the statement of Nissen et al. (2017) which states that out of 210 patients undergoing

scoliosis surgery, 64 patients (31%) received blood transfusions. In this case the researchers have the opinion that giving blood transfusions is related to the amount of blood volume lost during surgery and a decrease in the patient's Hb level.

i. Total blood transfusions

Table 4.16. Total blood transfusions

Total blood transfusions	Frequency	Percentage
1 - 2 bag	31	59.6
3 – 4 bag	16	30.8
> 6 bag	1	1.9
Total(n)	48	100

Based on the results of this study, the most total blood transfusions were 1-2 bags, a

total of 31 respondents (59.6%), with an average transfusion of 2.4 bags from a

total of 116 blood bags given to 48 postoperative scoliosis patients. This result is in accordance with Nissen et al (2017) which stated that 64 postoperative scoliosis patients, 24 patients (38%) were given 2 bags of transfusion per patient. In this case

the researcher has the opinion that the number of bags in the administration of blood transfusions depends on the total reduction in hemoglobin levels in the patient and the total bleeding during surgery. Of the 52 respondents who underwent scoliosis surgery, there were 4 respondents (7.7%) who did not receive blood transfusions.

j. Use of a ventilator

Table 4. 17. Use of a ventilator

Use of a ventilator	Frequency	Percentage
Use	13	25
not. Use	39	75
Total(n)	52	100

Based on the results of this study, the total number of respondents who used a ventilator after scoliosis surgery was 13 respondents or (25%). This result is in accordance with the statement of Yin et al (2018) which states that 14.9% of 174 patients, or 26 patients, had pulmonary

complications and required mechanical ventilation. In this case the researcher has the opinion that the use of a ventilator after scoliosis surgery is due to a decrease in lung function, it is also due to a lot of bleeding.

k. Duration of use of the ventilator

Tabel 4.18. Duration of the use ventilator

Duration of use of the ventilator	Frequency	Percentage
< 3 hours	1	7.7
3 – 6 hours	6	46.2
7 – 9 hours	2	15.4
10 -12 hours	2	15.4
> 12 hours	2	15.4
Total(n)	13	100

Based on the results of this study, the average result of respondents who used a ventilator after scoliosis surgery was 7.6 hours, this was resulted from the length of time using the ventilator from 13 postoperative scoliosis patients was 99

hours. The least time for using a ventilator in this study was 2 hours, while the longest was 13 hours for a total of 2 respondents from a total of 13 who were on a ventilator (15.4%). This result is in accordance with the statement of Yin et al (2018) which stated

that of 26 patients who were on mechanical ventilation, and 3 patients or (11.5%) were on a ventilator for > 12 hours. In this case the researcher has the opinion that the prolonged use of the ventilator in post-operative scoliosis patients is due to interference with spontaneous ventilation.

CONCLUSION

The sex characteristics of respondents after scoliosis surgery were mostly women with the ratio between women and men was 6.2: 1, the average age at the time of surgery was 17 years old and the most education was high school level. The criteria for ICU admission in postoperative scoliosis patients (75%) are priority 2, the most common type of scoliosis is idiopathic scoliosis (76.9%) with the most cases being Adolescent Idiopathic Scoliosis (AIS) as much as (99%). The magnitude of the degree of scoliosis curve in this study averaged 61.9°, with the results of preoperative lung vital function examinations of 50% for moderate restriction and severe restriction a total of 20% of the total 52 respondents. The average length of time used for scoliosis surgery was 4 hours 17 minutes with an average total hemorrhage of 700 - 1500 ml, on laboratory tests it was found that preoperative hemoglobin (Hb) levels were 12.9 g / dL, average postoperative Hb - average 9.79 g / dL, with a decrease in Hb levels an average of 3.19 g / dL. Blood transfusions were given to respondents after scoliosis surgery was 92.3%, with an average of 2.4 bags / respondent. For the use of a ventilator in this study, it was found that 25% of postoperative scoliosis patients

used a ventilator with an average use of 7 hours 36 minutes.

SUGGESTION

1. For Hospital Institutions

Please make medical records using an electronic system, so that there are no more unclear writings and incomplete records. Please complete the patient's medical records in writing a scoliosis diagnosis, complete the total intraoperative bleeding, all preoperative scoliosis patients undergo a spirometry examination. Hopefully the results of this study can be used as fact-based data, for the preparation of programs or Standard Operating Procedures (SPO) on spirometry examinations for scoliosis patients, on the preparation of blood components for scoliosis preoperative patients, the use of ventilators for postoperative scoliosis patients, postoperative scoliosis care in the ICU. . All of these have the aim of improving the quality of care services for postoperative scoliosis patients at Orthopedic Hospital. Prof. DR.R. Soeharso Surakarta.

For the Intensive Care Unit

Hopefully this research can provide an overview of postoperative scoliosis care based on an evident base, for the implementation of better nursing care.

For Other Researchers

We ask other researchers to be able to develop better research, further research with correlative, analytical or experimental types so that they can produce more varied research results and of course can improve the quality of hospital services in general and the quality of nursing services in particular. This research can be used as

a comparison, support or reference source for other researchers who carry out research of this type of research.

For Researchers

With this research, hopefully it can be used to increase insight and knowledge in accordance with the times. Hopefully this research will be the beginning for other studies and become a good learning medium.

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