THE EFFECT OF LENGTH OF STAY AND MORTALITY RATE IN PERITONITIS PATIENTS IN SAIFUL ANWAR GENERAL HOSPITAL MALANG ON JANUARY 2017-DECEMBER 2018

Taufan Heri Itanto[1], Aries Budianto[1]

[1] Department of Surgery, Faculty of Medicine, Universitas Brawijaya, Saiful Anwar General Hospital, Malang, Indonesia.

Corresponding author: Teguh Heri Itanto; Department of Surgery, Faculty of Medicine, Universitas Brawijaya, Saiful Anwar General Hospital, Malang, Indonesia; Email: taufanheri@gmail.com

Abstract

Introduction: Peritonitis is the most common abdominal emergency in emergency departments throughout the world. The cause of peritonitis testing is perforation with high mortality and morbidity rates.

Objective: The purpose of this study was to determine the description of peritonitis cases in RSSA Malang on January 2017- December 2018.

Material and Methods: The study design is a descriptive study with a sample of all peritonitis patients treated at RSSA Malang on January 2017-December 2018 that met the inclusion criteria, patients undergoing completion therapy. The medical sample was collected such as sex, age, cause of peritonitis, surgery, duration of treatment, and the condition of the patient's discharge.

Results: The number of peritonitis patients in RSSA Malang on January 2017-December 2018 was 318 who fulfilled the inclusion criteria of 303 patients. Peritonitis prevalence in men (65.3%) is higher than in women (34.7%). The largest age group is 20-29 years (20.5%). The most common cause of peritonitis is due to appendix perforation (48.8%). Most peritonitis patients received surgical management in the form of exploratory laparotomy and appendectomy (43.5%). The length of stay was 4-7 days (41.9%). According to the conditions of the exit most of them were alive (76.8%). Sepsis is the most condition for peritonitis patients was (36,9%). Correlation length of stay and age p=0,889; etiology p= 0,207; gender p=0,031; treatment p= 0,001

Conclusion: Peritonitis patients who were treated at RSSA Malang on January 2017-December 2018 were predominantly male, with age distributions ranging from 20-29 years. The most common cause of peritonitis is peritonitis due to appendix perforation. Laparotomy exportation and appendectomy are the most common surgical procedures performed at RSSA Malang. The mortality rate is still quite high at 23% and sepsis is the most complications experienced by peritonitis patients in RSSA, which is as much as 37% of total peritonitis patients.

Keywords: Peritonitis, Exploratory laparotomy, Appendectomy, Mortality rate

INTRODUCTION

Peritonitis is the most common abdominal emergency in emergency departments throughout the world.[3] Peritonitis is an inflammation of the serous membrane lining the abdominal cavity and the organs contained in it.[1] Inflammation of this cavity can occur due to many causes, perforation is one of the most common cause, with high mortality and morbidity rates.[19]

According to a WHO survey in 2005, cases of peritonitis in the world were 5.9 million cases. In the Democratic Republic of Congo, between October 1 and December 10,

2004, 615 cases of severe peritonitis (with or without perforation) were reported, including 134 deaths (a case facility rate of 21.8%) which were complications of typhoid fever.[4] According to the survey conducted by the Ministry of Health in 2008, the number of peritonitis in some parts of Indonesia is still high. The number of patients experiencing peritonitis is around 7% of the population in Indonesia or around 179,000 people.[6]

Peritonitis can affect all ages and occur in men and women. The most common cause of secondary peritonitis that is acute in children is appendix perforation, in elderly people complicating diverticulitis or peptic ulcer perforation. Peritonitis complications include blood clotting disorders, respiratory distress syndrome, and sepsis which can cause shock and failure of many organs. The diagnosis of peritonitis is based on clinical evaluation, laboratory examination, and radiological examination.[3]

The management of peritonitis is treating the underlying disease, administering systemic antibiotics, and supportive therapy to prevent or limit complications secondary to organ failure. The success of the treatment is based on controlling the source of infection and cleansing all residual intraabdominal infections. Management at the source of infection can be achieved by operating and non-operative.[5]

The mortality rate due to peritonitis globally is around 20% which is greatly influenced by complications, severity, and patient management procedures. Therefore epidemiological data collection is needed for cases of peritonitis. This epidemiological data collection is expected to be one of the references that can be used in RSSA Malang to determine the flow of management in patients with peritonitis.

MATERIAL AND METHODS

The research design used descriptive. This research will present a description of peritonitis patients who have been treated at RSSA Malang between January 2017- December 2018. This research was conducted on January 2018 in the RSSA Medical Record Unit of Malang.

The population was peritonitis patients who were treated at RSSA from January 2017 to December 2018. The sampling technique used total sampling, those patients were diagnosed with peritonitis and underwent complete therapy, while the exclusion criteria in this study were patients diagnosed with peritonitis and go home at your request. The variables studied were gender, age, cause, surgery, duration of treatment, condition of the patient's discharge.

Analysis of the data used in this study is univariate analysis. The data obtained is processed and presented in the form of a mean and frequency distribution (percentage) of each dependent and independent variable.

RESULTS

Based on data obtained from the Saiful Anwar Hospital Malang medical records, there were 318 patients diagnosed with Peritonitis on January 2017 to December 2018, 15 patients were not included in this study because the patient was not complete treatment (the patient returned home own request), so the number of patients studied was 303 patients. From these data can be described

Table 1. Cases of peritonitis by sex

No	Sex	Frequency	Percentage (%)
1	Male	198	65,3
2	Female	105	34,7
	Total	303	100

Table 1 illustrates that more peritonitis was seen in males compared to females, with 198 cases (65.3%) in males and 105 cases (34.7%) in females.

Table 2. Cases of peritonitis by age group

No	Age	Frequency	Percentage (%)
1	0 - 9 years old	1	0,3
2	10 - 19 years old	32	10,6
3	20 - 29 years old	62	20,5
4	30 - 39 years old	49	16,2
5	40 - 49 years old	41	13,5
6	50 - 59 years old	53	17,5
7	60 - 69 years old	35	11,6
8	70 - 79 years old	21	6,9
9	≥ 80 years old	9	3,0
	Total	303	100

Table 2 illustrates the percentage of the most age categories is the age group of 20-29 years which was 62 people (20.5%). The second rank is the age group category 50-59 years old was 53 people (17.5%). Then followed by age groups 30-39 years was 49 people (16.2%), aged 40-49 years were 41 people (13.5%,) aged 60-69 years was 35 people (11.6%), aged 10-19 years was 32 people (10.6%), aged 70-79 years was 21 people (6.9%), 9 people (3%) were over 80 years old and 1 person (0.3%) was less than 9 years old.

Table 3. Peritonitis cases based on etiology

No	Etiology	Frequency	Percentage (%)
1	Gastroduodenal perforation	72	23.7
2	Small intestine perforation	47	15.5
3	Colorectal perforation	8	2.6
4	Appendix perforation	148	48.8
5	Others	28	9.2
	Total	303	100

Table 3 illustrates that the most peritonitis caused by appendicitis perforation, which is 148 people (48.8%), followed by gastroduodenal perforation 72 people (23.7%), small intestine perforation 47 people (15.5%), perforation due to other causes 28 people (9.2%), and rectal colon perforation of 8 people (2.6%).

Table 4. Management of peritonitis (surgical) cases

No	Etiology	Frequency	Percentage (%)
1	Excision exploratory laparotomy (gastric and duodenal)	28	9,2
2	Exploration and resection laparotomy (jejunum and ileum)	45	14,8
3	Laparatomy Exploration and resection (Colon)	7	2,3
4	Laparotomy exploration and appendectomy	132	43,5

	(appendix)		
5	Peritoneal lavage	73	24,1
6	Others	16	5,2
7	Refuse surgery	2	1
	Total	303	100

Table 4 illustrates that the majority of peritonitis patients received surgical procedures namely exploratory laparatomy and appendectomy as many as 132 people (43.5%). The second action was 73 peritoneal lavage (24.1%), followed by exploration and resection laparatomy (jejunum ileum) 45 people (14.8%), exploratory and excision laparatomy (gastric-duodenal) 28 people (9.2%), other actions 16 people (5.2%), exploration and resection laparatomy (colon) 7 people (2.3%), and 2 people refused surgery.

Table 5. Cases of peritonitis based on length of stay

No	Length of stay	Frequency	Percentage (%)
1	≤ 3 days	88	29,0
2	4 – 7 days	127	41,9
3	8 – 14 days	62	20,5
4	> 14 days	26	8,6
	Total	303	100

Table 5 illustrates the average length of stay of patients with peritonitis in RSSA from January 2016 to December 2017, most in the 4-7 day group, which is 127 people. The second rank is the treatment for less than 3 days, 88 people (29%). Then followed by treatment for 8-14 days 62 people (20.5%) and care for more than 14 days, 26 people.

Table 6. Peritonitis cases based on the outcome

No	Outcome	Frequency	Percentage (%)
1	Died	70	23.1
2	Recover	233	76.8
	Total	303	100

Table 6 illustrates that the frequency of peritonitis patients according to the condition of discharge was mostly alive, ie 233 people (76.8%), and 70 people died (23.1%).

Table 7. Frequency of sepsis, hypoalbumin, and anemia

No	Description	Frequency	Percentage (%)
1.	Sepsis	112	36,9%
2.	Hipoalbumin	43	14,1%
3.	Anemia	91	30,03%

Table 7 illustrate the frequency of peritonitis patients who experienced sepsis was 112 out of a total of 303 with a presentation of 36.9%. This data was obtained during the study from January 2017 to December 2018. While peritonitis patients who experienced hypoalbumin were 43 cases with a percentage of 14.1%. For peritonitis patients who experienced anemia as many as 91 patients with a percentage of 30.03%.

Tabel 8. Correlation between length of stay and age

Length of stay	
Age	**p= 0,889**

***Significance difference: p<0,05**

Table 8 illustrate the correlation between length of stay and age, the analysis of spearman test that age was not related to the duration of the length of stay p= 0.889.

Tabel 9. Correlation between length of stay and etiology

Length of stay	
Etiology	**p= 0,207**

***Significance difference: p<0,05**

Table 9 illustrate the correlation between length of stay and etiology, the analysis of the Kruskal Wallis test that etiology was not related to the duration of the length of stay p= 0.207.

Tabel 10. Correlation between length of stay and gender

Length of stay	
Gender	**p= 0,031**

***Significance difference: p<0,05**

Table 10 illustrate the correlation between length of stay and gender, the analysis of the Kruskal Wallis test that gender-related to the duration of the length of stay p= 0.031.

Tabel 11. Correlation between length of stay and treatment

Length of stay	
Treatment	**p= 0,001**

***Significance difference: p<0,05**

Table 11 illustrate the correlation between length of stay and treatment, the analysis of the Kruskal Wallis test that treatment related to the duration of the length of stay p= 0.001.

DISCUSSION

Peritonitis is one of the most common causes of an acute abdomen. An acute abdomen is one of the emergencies that must be treated immediately. Total cases of peritonitis from January 2016 to December 2017 in RSSA reached 303 cases.

In this study, peritonitis occurred more in men than in women. This research conducted by Agarwal, et al, which found 76 male patients and 24 female patients.[1] In the study conducted by Ramachandra found 45 (90%) male and 5 (10%) female.[16] Research by Bali, et al. From May 2010-June 2013 found 274 (68.5%) men and 126 (31.5%) women.[17] Research conducted by Singh, et al found that the ratio of men to women 19: 7. According to Singh, et al, this is caused by lifestyle and risk factors such as smoking, caffeine consumption, alcohol abuse, and stress. Men seem to be more susceptible to this effect.[19] Another study conducted by Mabewa, et al, concluded that peritonitis is predominant in male sex.[18]

Based on the age group, it can be seen that peritonitis often occurs in the age group of 20-29 years, which is 62 people (20.5%). These results are consistent with research conducted by Rachmandra where a maximum incidence of 32% is seen in the third decade of life (21-30 years).[16] The study conducted by Agarwal mentioned that the majority of

subjects, 52%, occurred in the age group of 18-30 years.[1] Mabewa also reported that the average age of peritonitis was the age group between 21 years and 47 years.[18]

In this study, the most common cause of peritonitis was due to appendix perforation, which was 148 people (48.8%). This result is in line with research conducted at Bugondo Medical Center Tanzania by Mabewa, et al, where the most common cause of peritonitis is perforation appendicitis, which is 23.71%. Appendix and ischemic rupture cause sigmoid volvulus, this may be due to poor health behavior, as shown in the Mabewa study where the majority of patients (96%) come to the hospital more than 24 hours after the onset of illness or mismanagement in more health facilities. low.[8] This study is also comparable to research conducted by Ayandipo, et al., Where the most common cause of peritonitis is appendix perforation, which is 83 (27.5%).[21] However, this is different from research conducted at the Indian Jhalawar Hospital by Mewara, et al, who found that peritonitis was often caused by gastroduodenal perforation in 81% of cases.[20]

Most of the peritonitis patients performed operative measures in the form of exploratory laparatomy and appendectomy as many as 132 patients (43.5%). This study is in line with research conducted by Sahu, et al, where 42 cases of peritonitis were performed operatively and 8 cases received conservative therapy.[25] Based on the etiology of peritonitis patients treated at RSSA the most was perforation of appendicitis, the treatment given by taking action operative is appendectomy. Appendectomy is still the gold standard in the case of perforated appendicular.[12]

The duration of treatment of peritonitis patients in RSSA 41.9% were treated for 4-7 days. The study conducted by Sotto, et al, obtained varied between 0-70 days.[23]

Early diagnosis, intensive supportive care, appropriate antimicrobial administration and prompt operative measures and postoperative infections are important factors in determining a patient's prognosis.[24]

The peritonitis mortality rate in Saiful Anwar Hospital Malang from January 2016 to December 2017 reached 23%. Other literature reports that peritonitis mortality rates range from 6-27%.[22] Research conducted by Samuel, et al, reported that the death rate due to peritonitis was 15%.[3] According to Rachmandra, the high death rate was caused by the delay in patients coming to the hospital rather than delays in surgery.[16] Mortality in peritonitis can decrease if diagnosed more early, get supportive care, use of appropriate antimicrobials, appropriate surgical measures and intensive therapy.[24]

CONCLUSION

The description of peritonitis patients treated at RSSA Malang on January 2016-December 2017 is predominant in males, with an age distribution ranging from 20-29 years. The most common cause of peritonitis is peritonitis due to appendix perforation. Laparatomy exportation and appendectomy are the most common surgical procedures performed at RSSA Malang. Most patients are treated for 4-7 days. Most patients when the condition was discharged from the hospital in a state of life, but the mortality rate is still quite high at 23%. Sepsis is the most complications experienced by peritonitis patients in RSSA, which is as much as 37% of total peritonitis patients.

CONFLICT OF INTEREST

There is no conflict of interest related to the materials or methods used in this study.

FUNDING

This article received no specific funding from any funding agency in the public, commercial, or not-for-profit sectors.

AUTHORS' CONTRIBUTIONS

Authors took part in the design of the study, contributed to data collection, participated in writing the manuscript and all agree to accept equal responsibility for accuracy of the contents of this article.

REFERENCES

1. Agarwal, A, Choudhary, GA, Bairwa M., Choudhary A. Apache II scoring in predicting surgical outcome in patients of perforation peritonitis. International Surgery Journal. 2017 July;4(7).
2. Skipworth, R.J.E, Fearon K.C.H. Acute abdomen: peritonitis. Surgery Journal. 2008 March; 26(7): 98-101
3. Samuel JC, Qureshi JS, Mulima G, Shores CG, Cairins BA, Charles AG.An observational study of etiology, clinical presentation, and outcomes associated with peritonitis in ilonge, Malawi. World Journal of Emergency Surgery. 2011: 6-38
4. World Health Organization. Typhoid fever, Democratic Republic of the Kongo. Weekly Epidemiological Record. 2005;1 (80):1-8
5. Daley BJ. Peritonitis and abdominal sepsis. Medscape. Dis [serial online] 2017 (diunduh 10 Januari 2018). Tersedia dari URL : HYPERLINK https://emedicine.medscape.com/article/180234-overview#a6
6. Depkes RI. Profil Kesehatan Indonesia. Jakarta : Depkes RI. 2008
7. Ordonez, CA, Puyama, C.J. Management of peritonitis in the critically III patient. NIH public access. 2006 December; 86 (6):1323-1349
8. Evans, HL. Tertiary peritonitis (recurrent diffuse or localized disease) is not an independent predictor of mortality in surgical patients with intraabdominal infection. Surgical infection. 2001.: 2 (4): 255-63
9. Iwagaki, H. Clinical value cytokine antagonist in infectious complication res communmol pathol pharmacol. 1997 April: 96(1): 25-34
10. Marshall, JC. Intensive care management of intraabdominal infection. Critical care medicine. 2003; 31(8); 2228-37
11. Fauci et al. Harrison's Principal Of Internal Medicine McGraw Hill, Peritonitis. 2008; pages 808-810, 1916-1917.
12. Dusan, J, Zlatibor, L, Kristina, D, Aleksandar, K. Intra-abdominal infection and acute abdomen-epidemiology, diagnosis, and general principles of surgical management. 2015: 10 (1): 69-78
13. Mustafa, M, Menon, J, Muniandy, RK, Sieman, J, Shafira, AM, Illzam, EM. Pathophysiology, clinical manifestation, and diagnosis of peritonitis. IOSR Journal of dental and medical sciences. 2015 October; 14 (10).
14. Schwartz, S.I et al, *Principal of Surgery, 9th edition* USA: McGraw Hill Company., 2006; Hal1459-1467
15. Doherty, G.M., Current Diagnosis & Treatment. USA: McGraw Hill Company. 2010
16. Rachmahandra, ML. Age, sex incidence with signs, and symptoms of peritonitis. International Journal of Research in Medical Sciences. 2014 August : 2(3);916-919
17. Bali, R.S Verma, S, Agarwal, P.W, Singh, R, Talwar, N. Clinical study: Perforation peritonitis and the developing world. ISRN Surgery.2014
18. Mabewa, A, Seni, J.L, Chaya, P, Mshra, S, Gilyma, J.M. Etiology, treatment outcome, and prognostic factors among patients with secondary peritonitis at Bugando Medical Centre, Mwanza Tanzania. World Journal of Emergency. 2015
19. Singh, A, Khan I.H, Singh, S.P. Study of spectrum of perforation and it's management: A cross-sectional study at a tertiary care institute. Scholars Journal of Applied Medical Sciences. 2017: 5 (2B); 379-384

20. Mewara, B.C, Chorashiya, B.K, Porwal, S, Porwal, V, Gupta, A. A clinical study if spectrum of gastrointestinal perforation peritonitis in rural southern east Rajasthan. Journal of universal surgery. 2017:5; 2-9
21. Ayandipo, O.O, afuwapel, O.O, Irabor, D.O, Abdurrazzaq, A.L, Nwafulume, N.A. Outcome of laparatomy for peritonitis in 302 consecutive patients in Ibadan Nigeria. 2016 : 14: 30-34.
22. Oheneh M. Postoperative complication after surgery for typhoid ileal perforation in adults in Kumasi. Western African Journal of medicine. 2007: 28 (1); 32-38
23. Sotto, A, Lefrant JY, Peray PF, Muller, L, Tafuri J, Navarro F, et al. Evaluation of antimicrobial therapy management of 120 consecutive patients with secondary peritonitis. Journal of antimicrobial chemotherapy. 2002;50:569-76
24. Cavallaro A, Catania V, cavallaro M, Zanghi A, Cappelani A. Management of secondary peritonitis. Ann Ital Chir. 2008; 79: 255-60
25. Sahu S, Gupta A, Sachran P. Bahl D. Outcome of secondary peritonitis based on Apache II score. The Internet Journal Surgery. 2007;14(2).