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Characteristics of Peritonitis Patient in Blora, Indonesia: A pilot study in secondary hospital

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Abstract

Background: Peritonitis is frequent indication for urgent or emergent hospital admission with high risk of adverse outcome and second leading cause of sepsis in patients. Despite the increasing the availability and use of diagnostic tests, antimicrobial therapy and intensive care unit support, the rapid diagnosis and early management of peritonitis remains a challenge for physicians in emergency, surgery, and critical care

Methods: This study was undertaken to evaluate the characteristic of peritonitis patient in R. Soetijono General Hospital Blora, Indonesia. The method was descriptive retrospective studies using the medical record of Dr. R. Soetijono General Hospital Blora from July 2020 until July 2021.

Results: There were 84 cases of peritonitis between July 2020 and July 2021. The peritonitis patient mostly male more than 60 years old. Secondary peritonitis is the most cause of peritonitis with predominantly appendicitis perforation as predisposing condition. 75 % patients undergo laparotomy exploration and length of stay patient mostly 4-7 days. The occurrence of sepsis is 22.62 % with mortality rate 20.24%.

Conclusion: Secondary peritonitis is still dominant cause of peritonitis with mostly cause by appendicitis perforation. Despite the adequate source control and supportive treatment, risk of sepsis is high and leading to increase in mortality rate.

Keywords: peritonitis, characteristic, source control, perforation, surgical

I. Introduction

Peritonitis is frequent indication for admission to the intensive care unit with high risk of adverse outcome and second leading cause of sepsis in patients. (1, 2) Peritonitis is inflammation of the peritoneum that can be divided into primary, secondary, and tertiary peritonitis. (2) Primary peritonitis results from bacterial translocation, hematogenous spread, or the iatrogenic contamination of the abdomen without a macroscopic defect in the gastrointestinal tract. (2) Secondary peritonitis is the most common form of peritonitis that occurs as a result of direct peritoneum contamination by spillage of chemical irritant from perforation or necrosis of a hollow organ such as gastrointestinal, urogenital, or their associated solid organ. Tertiary peritonitis refers to secondary peritonitis that persists for more than 48 hours after an attempt at surgical source control.(2, 3)

Peritonitis especially resulting from perforation frequently need surgical emergency, despite advance in surgical techniques, antimicrobial therapy and intensive care, management of peritonitis remain difficult and complex because majority patient in Indonesia especially that live in rural area come to the hospital late with septicemia thus increasing mortality. (4)

II. Material and Methods

This study is a retrospective descriptive study using medical records at Dr. R. Soetijono General Hospital Blora, Indonesia. The sample inclusion criteria in this study were all peritonitis patient who were admitted at Dr. R. Soetijono General Hospital Blora from July 2020 until July 2021. While the sample exclusion criteria were medical record with incomplete data. Approval of the Institute Ethics Committee was obtained before the study

III. Results

From the total 84 peritonitis cases in R. Soetijono General Hospital during the period July 2020-July 2021, we found mostly patient > 60 years old (38.1%) with male predominant (65.48%) and secondary peritonitis are the most cause contributing in peritonitis occurring in 82.14 % patient. Laparotomy exploration was performed on 75% patients. The length of stay patient mostly 4-7 days (54.76%), 25% 8-14 days, 16.67% < 4 days and just 3 patients (3.57%) have length of stay more than 14 days.

Table 1. Baseline characteristic of patients

Characteristic	Total	Percentage (%)
Age		
0-9	2	2.38 %
10-19	15	17.86 %
20-29	6	7.14 %
30-39	7	8.33 %
40-49	5	5.95 %
50-59	17	20.24 %
>60	32	38.1 %
Gender		
Male	55	65.48 %
Female	29	34.52 %
Peritonitis location		
Localized	39	46.43 %
Generalized	45	53.57 %
Classification		
Primary	2	2.38 %
Secondary	72	85.71 %
Tertiary	10	11.91 %
Laparotomy		
Yes	63	75 %
No	21	25 %
Length of stay		
< 4 days	14	16.67 %
4-7 days	46	54.76 %
8-14 days	21	25 %
>14 days	3	3.57 %

Cause of peritonitis in this study mostly secondary from perforation of appendicitis (69.05%). Following by tertiary peritonitis resulting from post laparotomy exploration (11.91%).

Table 2. Cause of peritonitis

Cause of peritonitis	Total	Percentage (%)
Primary		
Tuberculosis	2	2.38 %
Secondary		
Appendix perforation	58	69.05 %
Gastric perforation	2	2.38 %
Ileum perforation	5	5.95 %
Billiary rupture	2	2.38 %
Renal	3	3.57 %
Intraabdominal tumor	2	2.38 %
Tertiary (Post laparotomy exploration)	10	11.91 %
	84	100 %

Sepsis was occurred in 22.62% patients and 89.4 % (17 of 19) patients developed septic shock mostly less than 4 days of hospitalization.

Table 3. Sepsis occurrence in peritonitis patient

Sepsis occurance	Total	Percentage (%)
Yes	19	22.62 %
No	65	77.38 %

Outcome of peritonitis patient in this study were 79.76 % patient successfully recovered and 20.24% were died because they developed septic shock and 52.94 % of them died less than 48 hours of admission.

Table 4. Outcome of peritonitis patient

Outcome	Total	Percentage (%)
Recovered	67	79.76 %
Death	17	20.24 %

IV. Discussion

Peritonitis is still a significant surgical problem in tropical country such in Indonesia. It can affect all of age, gender, and varies depend on the underlying abdominal disease processes. In this study peritonitis mostly affected male patient, with age more than 60 years old, that different with study in India that affecting young men mostly less than 50 years old. (5) Another study in India shows majority patient between 21-30 years with bimodal distribution for gastric perforation 21-30 years and 51-60 years. (6) Another study in Indonesia showed the same result that mostly patients are male and > 60 years. (7)

Peritonitis is inflammation of the peritoneum that can be divided into primary, secondary, and tertiary peritonitis. (2) The abdomen is the second most common source of sepsis and secondary peritonitis. The most common causes of peritonitis are perforation, ischemic necrosis or penetrating injury to the hollow organ. Secondary peritonitis is the most cause of peritonitis in this study that similar with study that done in Dr. M. Djamil Padang general hospital and predominantly caused by perforated appendicitis. Another study in Tanzania shows the similarity with predominance of perforated appendicitis, peptic ulcer disease, ischemia and typhoidal perforation as the common etiologies. (7-9) Other study in India show different result with the commonest cause of peritonitis was gastroduodenal perforation followed by appendicitis in second. (10) Acute perforation of the appendix is one of the complications of appendicitis that need a surgical emergency. Predisposing factor of perforation of the appendicitis include extremes of age, male, pregnancy, immunocompromised condition, and other comorbid conditions and previous abdominal surgery. In one research in Nigeria, the perforation rate was 28.5% with peak age of presentation was between 21-30 years and mostly were male patients. (11) Study in Turkey in appendicitis patient older than 65 years old reveal perforation rate 40% and factors predisposing high mortality are delay in hospital admission, older age, atypical clinical manifestation, length of hospital stay and antibiotic use. Tertiary peritonitis can be described as the persistence or recurrence of intra-abdominal infection despite adequate treatment for primary or secondary peritonitis. (9) In this study there are 11.91 % patient with tertiary peritonitis with prompt laparotomy exploration.

The terminology of peritonitis, intra-abdominal infection, and abdominal sepsis are not the same, but sometimes they are used to define similar clinical condition. Peritonitis is defined as an inflammatory process of the peritoneum caused by any irritant/agent. Intra-abdominal infection is defined as the local manifestations that happen because of peritonitis. Intra-abdominal sepsis is a systemic manifestation of a severe peritonitis. (12) The pathogenic microorganism growth in sterile abdominal compartment that can manifest significantly mostly caused by perforation of the gastrointestinal. Perforation may lead to bacterial inoculation causes an inflammatory response that acts locally to contain the infection; but, in the setting of overburden contamination, it can induce systemic inflammation**.** (13) Peritonitis can potentially lead systemic inflammatory response and intra-abdominal infection is the second leading cause of sepsis with high mortality ranging from 7.6% to 36%. Once a patient developed septic shock, cardiovascular instability, sepsis-associated coagulopathy, and worsening organ failure, it may increase mortality rates to over 50%, or even 80% in the developing country. (14-16) In this study the occurrence of sepsis is 22.62%.

The management approach of secondary peritonitis is elimination of the infectious focus supported by administration of systemic antimicrobial therapy and supportive therapy that can minimize or limit the complication of multi organ failure. Source control in intra-abdominal infection consist of four important elements, debridement, removal of infected devices, drainage of purulent cavities, and decompression of the abdominal cavity. Prompt source of infection control can be achieved by surgical intervention. Inadequate initial source control may increases the mortality rate from 26.7% to 42.9%. (17, 18) In this study 75% patients undergo laparotomy exploration. Successful treatment was achieved when adequate source of infection control with resolution of systemic inflammatory response and removal of all intraabdominal infection can be managed well. (19)

The mortality of peritonitis in the early 1900s was close to 90% because it was managed nonoperatively until basic principle of surgery of intra-abdominal infection was introduced by Kishner. (12) The mortality rate of perforation peritonitis varies ranging from 6% to 36% depend on the site and cause of perforation and major causes of post-operative morbidity are respiratory complications, wound infection, septicemia and electrolyte imbalance. (4, 5) The mortality of peritonitis patient in this study is 20.24% because they develop septic shock and multi organ failure. In a study the mortality of peritonitis patient older than 65 years old is 28% and when there was concomitant diabetes mellitus the mortality may increase up to 50% (20)

There is no single easy laboratory test that can predicts the prognosis in patients with peritonitis. The prognosis in peritonitis may influenced by the condition of the patient at the beginning of admission and concomitant risk factors. (20) The length of hospitalization may contribute in prognosis of peritonitis patient because it related to nosocomial infection that may worsened the patient condition. In this study length of stay mostly 4-7 days. Another factor that may contribute is time from initial symptoms to admission that can't be noted accurately in this study because patient mostly forgot and did not notice when they firstly feel the symptoms related to peritonitis.

V. Conclusion

Secondary peritonitis is still dominant cause of peritonitis with mostly cause by appendicitis perforation. Despite the adequate source control and supportive treatment, risk of sepsis is high and leading to increase in mortality rate.

Conflicts of Interest

The authors declare that there are no conflicts of interest.

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