

Patterns and Early Treatment Outcomes of Peritonitis among Patients Admitted at Dodoma Regional Referral Hospital, Dodoma Region, Tanzania

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Abstract

Background: Peritonitis is a common surgical condition which can occur either primarily or secondarily to other underlying pathologies including post operation. Studies show that the major causes of peritonitis are gastro intestinal perforations, small bowel perforations, perforated appendix, and perforated colon due to diverticulitis, volvulus and strangulated bowel. Severe morbidity and high mortality rate are seen in developing countries.

Objective: This study aimed at describing the patterns, and early treatment outcomes of patients with peritonitis at Dodoma Regional Referral Hospital.

Methods: This was a prospective cross sectional hospital based study which included all patients admitted with the clinical features of peritonitis for seven months from 1/10/2015 to 30/4/2016. The study was conducted in surgical wards of Dodoma Regional Referral Hospital which is located in Dodoma Region, central part of Tanzania. Patients' information of interest were collected using a structured questionnaire and then analyzed. Measures of outcome were time to discharge.

Results: A total number of 66 patients with generalized peritonitis were involved in the study. Of these, 23 (34.85%) were females and 43 (65.15%) were males. Perforation was found to occur in 51 patients (77.3%). Typhoid fever was found to be the leading cause of perforations leading to peritonitis in 12 patients (18.18%). Individuals from low social economic class (peasants) found to be affected for 55%. Males were affected for 65.2%. Individuals of young age were affected for 69.7%. High mortality rate was found to be due to delay in appropriate care (75.8%).

Conclusion: Generalized peritonitis was found to be a common problem at Dodoma Referral Regional Hospital. It seems to affect individuals mostly from low social economic class of which males were affected more than females. Many of the affected individuals were young. Mortality and morbidity found to be high.

Recommendations: Government to provide adequate and accessible medical care. Provision of health education on prevention, early recognition and decision making. Government to ensure high-quality medical care, laboratories and availability of drugs which can be provided even in environments with severely constrained resources.

Keywords: Outcome of peritonitis; Peritonitis; Dodoma regional hospital

Introduction

Peritonitis is most often caused by introduction of an infection into the otherwise sterile peritoneal environment through organ perforation, but it may also result from other irritants, such as foreign bodies, bile from a perforated gall bladder or a lacerated liver, or gastric acid from a perforated ulcer [1].

Spontaneous bacterial peritonitis is an acute bacterial infection of ascitic fluid. This can occur as a complication of any disease state that produces the clinical syndrome of ascites, such as heart failure and Budd-Chiari syndrome. The highest risk of SBP however is in patients with cirrhosis who are in a decompensate state [2].

Common etiologic entities of secondary peritonitis (SP) include perforated appendicitis; perforated gastric or duodenal ulcer; perforated (sigmoid) colon caused by diverticulitis, volvulus, or cancer; and strangulation of the small bowel. Necrotizing pancreatitis can also be associated with peritonitis in the case of infection of the necrotic tissue [3].

The most common cause of postoperative peritonitis is anastomotic leaks, with symptoms generally appearing around 7 days postoperatively. Following elective abdominal operations for

noninfectious etiologies, the incidence of SP (caused by anastomotic disruption, breakdown of enterotomy closures, or inadvertent bowel injury) is significant [4].

The clinical manifestations of peritonitis are abdominal pain, abdominal tenderness and abdominal guarding which are exacerbated by moving the peritoneum, e.g., coughing, flexing one's hips, or positive Blumberg sign. Abdominal rigidity is the most specific finding for diagnosing peritonitis. Other features are fever and paralytic ileus which also causes nausea, vomiting and bloating.

The modalities of treatment are surgery in case of secondary

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peritonitis and medical (i.e. only by medications) in case of spontaneous bacterial peritonitis

Problem statement

Peritonitis is a challenging condition that is associated with high mortality rate despite many efforts made in improving intensive care and surgery [5]. Severe morbidity and high mortality is especially experienced in developing countries [6].

Broad objective

To describe patterns and early treatment outcome of patients with peritonitis at Dodoma Regional Referral Hospital, Dodoma Region, from October 2015 to April 2016.

Specific objectives

To describe the patterns of peritonitis at Dodoma Regional Referral Hospital, Dodoma Region from October 2015 to April 2016

To describe the treatment modalities given to patients with peritonitis at Dodoma Regional Referral Hospital, Dodoma Region from October 2015 to April 2016

To determine the early treatment outcome of patients with peritonitis at Dodoma Regional Referral Hospital, Dodoma Region from October 2015 to April 2016.

Rationale of the study

Despite improved diagnostic modalities, potent antibiotics, modern

intensive care and aggressive surgical treatment, many patients still die because of peritonitis. The pattern, risk factors and treatment outcome of peritonitis are not well documented in our region. Therefore this study provides a data based evidence on the profile of this fatal condition and gives recommendations to improve care of patients with peritonitis.

Methodology

Study design

This was a prospective cross-sectional hospital based study which included all patients admitted with the clinical features of peritonitis for seven months from 1/10/2015 to 30/4/2016?

Study site

The study was conducted in surgical wards of Dodoma Regional Referral Hospital which is utilized by people from the entire Dodoma region and from neighboring districts such as Gairo-Morogoro, Kiteto-Manyara, Manyoni - Singida etc. This hospital has four wards dedicated for surgical patients with 77 beds.

Participants

All patients who were admitted in surgical wards at Dodoma Regional Referral Hospital from October 2015 to April 2016.

Study sample

All patients who were admitted in surgical ward at Dodoma

Age (yrs)	Males	%	Females	%	Total	%
01-May	1	1.52	0	0	1	1.52
Jun-20	13	19.7	7	10.61	20	30.3
21 – 40	18	27.27	8	12.12	26	39.39
41 – 60	8	12.12	3	4.55	11	16.67
>60	3	4.55	5	7.58	8	12.12
Total	43	65.15	23	34.85	66	100

Table 1: Distribution of peritonitis cases by age and sex.

Disease	Age (years)											
	1-5 No of pts	%	6-20 No of pts	%	21-40 No of pts	%	41 - 60 No of pts	%	>60 No of pts	%	Total No of pts	%
Typhoid fever	0	0	7	13.37	5	9.80	0	0	0	0	12	23.53
Appendicitis	0	0	2	3.92	3	5.88	0	0	1	1.96	6	11.76
Trauma	0	0	5	9.80	4	7.84	0	0	0	0	9	17.65
Hernia	0	0	0	0	0	0	0	0	4	7.84	4	7.84
IBD	0	0	0	0	1	1.96	1	1.96	0	0	2	3.92
PUD	0	0	0	0	4	7.84	1	1.96	0	0	5	9.8
Volvulus	0	0	2	3.92	2	3.92	3	5.88	0	0	7	13.73
Intussusception	0	0	1	1.96	2	3.92	2	3.92	0	0	4	7.84
Idiopathic	0	0	1	1.96	1	1.96	0	0	0	0	2	3.92
Total	0	0	18	35.30	22	43.14	7	13.73	5	9.80	51	100

Table 2: Causes of bowel perforations vs. age.

Sn	Causes	Peasants	%	Small traders	%	Children	%	Employed	%	Total	%
1	Perforations	28	42.4	9	13.6	13	19.7	1	1.5	51	77.3
2	Anastomotic leakage	1	1.5	0	0	1	1.5	0	0	2	3
3	Chemical peritonitis	1	1.5	0	0	0	0	0	0	1	1.5
4	Spontaneous peritonitis	5	7.6	3	4.6	2	3	1	1.5	11	16.7
5	Post op sepsis	1	1.5	0	0	0	0	0	0	1	1.5
	Total	36	55	12	18	16	24	2	3	66	100

Table 3: Distribution of causes of peritonitis versus occupation.

Sn	Modality	Cured	%	Complication	%	Death	%	Total	%
1	Surgical	31	47.97	15	22.73	11	16.67	57	86.4
2	Medical	5	7.58	2	3.03	2	3.03	9	13.6
	Total	36	54.55	17	25.76	13	19.70	66	100

Table 4: Treatment modality versus outcome.

Regional Referral with clinical features of peritonitis during the study period were taken to constitute the sample size. A convenient enrollment technique was employed in which all patients presented to hospital and confirmatory diagnosed to have peritonitis and got treated during the study period were enrolled.

Inclusion criteria

All patients who were proved to have peritonitis, admitted at DRRH between 1/10/2015 to 30/4/2016 and got definitive treatment.

Exclusion criteria

All patients who die after diagnosis but before getting treatment.

Data collection methods and tools

Data were collected using a semi structured questionnaire. The data were obtained from patients, relative for minors and case notes.

Data processing and analysis

After collecting data, a manual processing by using a data master sheet was done. Analysis was done by using SPSS version 20. The results were organized and presented in tables. Analysis keep made to determine the distribution of peritonitis according to age and sex, predisposing factors and early treatment outcome of peritonitis. Measures of outcome were time to discharge.

Intervention

Two modality of treatment were medical (only by drugs) and surgical.

Ethical Issues

University of Dodoma ethical committee was sought for ethical authorization of this study and permission to perform the study was required from the administration of Dodoma Regional Referral Hospital. Verbal consent was sought from study participants on admission; however that was not willing to participate in the study was not deprived of the intended services offered. Confidentiality was maintained by conducting the interview in privacy.

Results

Data from 66 patients who presented with generalized peritonitis were collected for 7 months from October 2015 to April 2016 (Table 1). The mostly affected age group was 21 to 40 years (39.4%). The least affected age group was under five years for both sexes (1.5%). Most patients affected were males (65.2%). Since Chi Square $\chi^2 = 63.867$ with p value $0.003 < 0.05$ there is significant association between age with cause of bowel perforation (Table 2). Typhoid fever was the commonest cause of bowel perforations (18.18%) followed by trauma (13.64%) meanwhile the least cause were inflammatory bowel disease and idiopathic (3.03% each).

Since Chi Square = 38.498 with p value $0.011 < 0.05$ there is significant association between cause of peritonitis with occupation. Peasants were found to be affected in all causes of peritonitis mentioned

above, of which perforations found to affect a large number of them. In chemical peritonitis and post operative sepsis only one patient was affected (1.5% each) who was a peasant (Table 3). Most patients with peritonitis involved in the study were treated by surgery (86.4%), and few (13.6%) were managed by drugs only (medically). Many patients who developed complications and many who died were those treated surgically (Table 4).

Discussion

This study showed that males were affected more (65.15%) compared to females (34.85%). This compares with the same study done in Uganda of which males were affected for 74.2% and female for 25.8% (Cent & Afr, 2015). This similarity could probably be due to the fact that, both these areas of study are near and hence they almost resemble the demographic characteristics including life style and even occupations which mostly seems to be the contributing factor for development of peritonitis [7].

In index study the young age (between 6 and 40 years) were affected more (69.7%) compared to other age groups. This compares with the other study done in Lilongwe Malawi of which the average age of those who were affected were 35 years (Samuel et al.). This similarity is because these two studies were done in developing and nearby countries which shares many of the characteristics. The findings could be due to the fact that young people have many activities and movements, so the chance of encountering many risk factors for peritonitis becomes high compared to other ages [8].

In index study perforation was the most cause of peritonitis (77.3%). This compares with the result of a study of which one of the most common surgical emergencies was peritonitis due to perforation and it was commonly seen in a younger age group in the tropical countries (Verma et al.). This similarity could probably be due to the fact that both these studies were done in tropical countries where infectious diseases such as typhoid fever and Helicobacter pylori infection which cause peptic ulcers are common.

This study shows that typhoid was the leading cause of perforations for 18.18%. The pre disposing factors for perforation in typhoid are poor social economic status which is the cause of delay to go for treatment. Also poor diagnostic facilities and lack of well trained health care providers is the cause of delay in diagnosing the disease and hence delay in starting appropriate management. This matches with the findings of a study done at Bugando medical centre Tanzania of which typhoid perforations seems to be superior compared to other causes [9]. This similarity is due to the fact that both these areas of study are found in tropical countries which share the risk factors.

In this study trauma found to be the next common cause of peritonitis for 13.64%. The major causes of trauma were violence and accidents. It includes motor vehicle accidents and the rest by other modes. This is comparable with a prospective descriptive study done in Nigeria of which among 23 patients who had traumatic bowel perforation, 19 patients showed features of peritonitis [10]. This similarity is because both these studies were done in developing countries where the risk for abdominal trauma could be the same.

Perforated peptic ulcer is relatively rare (7.58%) but life-threatening with the associated increase in mortality. This compares with a study done and published in the world journal of emergence surgery of which the number of patients compared to the duration of data collection was very low [11].

With regards to the results of this study, the peasants were affected more in all causes of peritonitis to a total of 55%. Mostly is the peritonitis due to perforations. Peasants are small scale farmers who depend on growing crops to get food and money. This is the group of people who are poor socially and economically. This is comparable to a study done in Northern central Nigeria which shows that 78% of patients with peritonitis belong to low social economic strata [12]. The reason for this similarity is that both these studies were done in developing countries which actually most of the patients are poor. Poverty is the contributing factor for all levels of delay to get appropriate treatment. Obstacles to seeking medical treatment are high transport costs of seeking treatment, costs of food during hospitalization and the social and economic implications of providing care to affected relatives during hospital admissions (10). These factors make patients to seek medical care in late stages of the disease. From index study it seems that there is significant association between causes of peritonitis with occupation. (P value 0.011)

In index study morbidity (complications) and mortality (death) found to be high (25.8% and 19.7% respectively) and seem to be superior in our settings. Findings of this study are comparable with those of the study on peritonitis done in Lilongwe Malawi of which the mortality was 15% [8]. This similarity is due to the fact that both these studies were done in developed countries where there are similar settings and limited technical background. Even in some western countries, overall complication rates as high as 41% have been reported [13].

Many patients were treated by surgery (86.4%) and of these a large number (39.4%) fall into complications and death. These results are contrasting with those of [14] by which results of surgery seems to be improving because the post operative death found to be low. This difference is due to the fact that the study of Mineccia was done in developed countries where there are improved settings. But they are comparable with the results of the study done at Bugando hospital Tanzania of which postoperative complications were 36% and death were 15.5% [15,16]. Few patients (13.6%) were treated conservatively because they had no surgically demanding condition. Conservative treatment included resuscitation and drugs particularly antibiotics [17, 18].

Conclusions

Generalized peritonitis is the common problem at Dodoma regional referral hospital and in the developing countries as a whole. It is commonly encountered surgical emergence which is associated with high morbidity and mortality rate.

Poor social economic status is associated largely with the development of peritonitis.

Males were affected more with peritonitis compared to female sex.

Young age (6 to 40 years) is affected more compared to other age groups.

Perforations of the bowel seem to contribute a lot in causing generalized peritonitis and the major cause of these perforations was typhoid fever.

The majority of patients with peritonitis (86.4%) were treated with surgery.

Limitations of the study

There was no access of doing culture and sensitivity to patients with peritonitis in order to know the causative organisms. Due to various reasons there was no time to make a long term follow-up in order to know the late treatment outcome to those patients who were discharged.

Recommendations

Preventive efforts, for example, the public health goals that can help prevent and control typhoid fever, safe drinking water, improved sanitation and adequate medical care should be advocated. Provision of health education for early recognition and decision making.

Responsible government policies should focus on equitable implementation of efficacious and cost-effective health interventions which are easily accessible and affordable in order to avoid delayed presentation which significantly adds to the mortality and morbidity.

An aggressive preoperative evaluation and steps to correct deranged homeostasis, an early surgery and vigilant postoperative care are the keys to avoiding postoperative mortality.

Efforts should be made by the government to ensure high-quality care laboratories and availability of drugs which can be provided even in environments with severely constrained resources.

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References

1. Cholongitas E, Papatheodoridis GV, Vangelis M, Terreni N, Patch D, et al (2005) Systematic review: The model for end-stage liver disease - Should it replace Child-Pugh's classification for assessing prognosis in cirrhosis? *Alime Pharmac Therapeu* 22: 1079-1089.
2. Runyon BA (2004) Management of adult patients with ascites due to cirrhosis. *Hepatology*, 39: 841-856.
3. Elgazwi K, Khudora M, Ben (2015) The characteristics and outcomes of secondary peritonitis in a tertiary hospital , Benghazi , Libya. *Ibnosi J Medi Biome Scie* 1: 136-140.
4. Hyman N, Manchester TL, Osler T, Burns B, Cataldo PA (2007) Anastomotic leaks after intestinal anastomosis. *Anna Surge* 245: 254-258.
5. Paryani JJ, Patel V, Rathod G (2013) Etiology of Peritonitis and Factors Predicting 4: 145-148.
6. Adesunkanmi ARK, Badmus TA, Fadiora FO, Agbakwuru EA (2005) Generalized peritonitis secondary to typhoid ileal perforation: Assessment of severity using modified APACHE II score. *Indi J Surg* 67: 29-33.
7. Rajandeep SV, Sushant V, Agarwal PN, Rajdeep S, Talwar N (2014) Perforation peritonitis and the developing world. *ISRN Surgery* 2014: 1-4.
8. Samuel JC, Qureshi JS, Mulima G, Shores CG, Cairns BA et al. (2011) An observational study of the etiology, clinical presentation and outcomes associated with peritonitis in Lilongwe, Malawi. *WJES* 6: 37.
9. Chalya PL, Mabula JB, Koy M, Kataraihya JB, Jaka H, et al. (2012) Typhoid intestinal perforations at a university teaching hospital in Northwestern Tanzania: A surgical experience of 104 cases in a resource-limited setting. *Worl J Emerge Surg* 7: 4.
10. Aujoulat I, Johnson C, Zinsou C, Guédénon A, Portaels F (2003) Psychosocial aspects of health seeking behaviours of patients with Buruli ulcer in southern Benin. *Tropi Medi Internat Hea* 8: 750-759.
11. Bertleff MJOE, Lange JF (2010) Laparoscopic correction of perforated peptic ulcer: First choice? A review of literature. *Surgic Endos Othr Interven Techn* 24: 1231-1239.

12. Ugwu BT, Yiltok SJ, Kidmas AT, Opaluwa AS (2005) Typhoid intestinal perforation in North Central Nigeria. *Wes Afri J Med* 24: 1-6.
13. Khalid S, Burhanulhuq, Bhatti AA (2014) Non-traumatic spontaneous ileal perforation: experience with 125 cases. *J Ayub Med Coll Abbottabad* 26: 526-529.
14. Mineccia M, Zimmitti G, Ribero D, Giraldi F, Bertolino F, et al. (2016) Improving results of surgery for fecal peritonitis due to perforated colorectal disease: A single center experience. *Intern J Sur* 25: 91-97.
15. Mabewa A, Seni J, Chalya PL, Mshana SE, Gilyoma JM (2015) Etiology, treatment outcome and prognostic factors among patients with secondary peritonitis at Bugando Medical Centre, Mwanza, Tanzania. *WJES* 10: 47.
16. Sule A, Kidmas A, Awani K, Uba F, Misauno M (2007) Gastrointestinal perforation following blunt abdominal trauma. *East Afri Medi J* 84: 429-433.
17. Bertleff MJOE, Lange JF (2010) Perforated peptic ulcer disease: A review of history and treatment. *Dige Surg* 27: 161-169.
18. Cent E, Afr J (2015) ISSN 2073- ISSN 2073- 2073 - 9990 East Cent . *Afr J s urg* 20(August), 62-68.