

ST. PAUL'S HOSPITAL MILLENNIUM MEDICAL COLLEGE



DEPARTMENT OF PUBLIC HEALTH

THE PATTERN AND OUTCOME OF SURGICALLY TREATED NON TRAUMATIC SURGICAL ACUTE ABDOMEN IN SPHMMC. ADDIS ABABA, ETHIOPIA FROM SEP TO AUG 2009 E.C.

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**A STUDENT RESEARCH REPORT SUBMITTED TO THE DEPARMENT
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ADDIS ABABA, ETHIOPIA

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Abstract

Background: Surgical acute abdomen is one of commonly encountered emergencies in the practice of general Surgery. However, there was not much study done regarding the pattern and outcomes of acute abdomen in Ethiopia, particularly in the study area.

Objective: to determine the pattern and outcomes of surgically treated acute abdomen in SPHMMC.

Method: The study was a retrospective study conducted on 274 adult patients admitted with acute abdomen in SPHMMC from September 1, 2009 to August 30, 2009 E.C. Variables were demographical data, clinical features, and causes of acute abdomen, immediate complication and outcomes of the surgical management of acute abdomen. The data collected processed using SPSS version 21 software.

Result: There were 274 patients of which 141(51.5%) were males and 133(48.5%) were females. Abdominal pain (100%) and Vomiting (76.6%) were most common complaints. Acute appendicitis was most common cause accounting for 69.7 % of the patients, followed by intestinal obstruction (17.1%). Surgical site infection and Hospital acquired pneumonia were most common postoperative complication.

Conclusion: Acute appendicitis is the most common cause of acute abdomen. Surgical site infection and hospital acquired pneumonia were the commonest postoperative complication. Early diagnosis, adequate preoperative and postoperative care may help to reduce the postoperative complication.

Acronyms and Abbreviations.

AA: Addis Ababa

AaBET: Addis Ababa Burn Trauma and Emergency

AGE: Acute Gastroenteritis

ENT: Ear, Nose & Throat

ESOPD: Emergency Surgical Out Patient Department

ED: Emergency Department

GRH: Goba Referral Hospital

NRF: Nekemte Referral Hospital

LBO: Large Bowel Obstruction

LLQ: Left Lower Quadrant

LUQ: Left Upper Quadrant

OBGYN: Obstetrics and Gynecology

OPD: Out Patient Department

OR: Operating Room

PPUD: Perforated Peptic Ulcer Disease

PUD: Peptic Ulcer Disease

PAppend: Perforated Appendicitis

RLQ: Right Lower Quadrant

RUQ: Right Upper Quadrant

SBO: Small Bowel Obstruction

SPHMMC: St Paul's hospital Millennium medical College

TAH: Tikur Anbessa Hospital

UTI: Urinary tract Infection

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1. Introduction

1.1 Background Information

The term acute abdominal pain generally refers to previously undiagnosed pain that arises suddenly and is of less than 7 days (usually less than 24hr) duration, many of which need for surgical treatment(1).

Acute abdomen is a term used to encompass a spectrum of surgical, medical and gynecological conditions, ranging from the trivial to the life-threatening, which require hospital admission, investigation and treatment(2).

Acute abdomen, sometimes called surgical abdomen, refers to the sign and symptoms of abdominal pain and tenderness a clinical presentation that often requires emergency surgical therapy to relieve symptoms, to prevent complications and to prevent fatality of the diseases. The cause of acute abdomen may arise from any of the organs in the abdomen, retroperitoneum, inguinoscrotal region and other extra-abdominal organs. Detail medical history, thorough physical examination and essential investigations are required to determine which of the diseases causes acute abdomen.(3)

Abdominal pain comprises 5 to 10 percent of emergency department (ED) visits worldwide(5).

The causes of the acute abdomen are several and their relative incidence varies in different populations. Worldwide, appendicitis, bowel obstructions, incarcerated or strangulated hernias, volvulus, and acute biliary pathology remain the most common causes of the acute abdomen in adults. (7)

Acute appendicitis is one of the common cause of acute abdomen worldwide. Appendicitis refers to an inflammation of the vestigial vermiform appendix, which is a blind-ended luminal organ located at the convergence of teniae coli along the inferior aspect of cecum with no known function in adult humans. The natural history of appendicitis is similar to that of other inflammatory processes involving hollow visceral organs. Initial inflammation of the appendiceal wall is followed by localized ischemia, perforation, and the development of a contained abscess or generalized peritonitis.(8)

Intestinal obstruction has been the leading cause of acute abdomen in several African countries. The leading causes of intestinal obstruction in africans have mostly been hernia and volvulus whereas adhesions are most frequent in the developed world. there are, however, some african studies which are pointing to a change inthes established.(10)

In Ethiopia from a study done in TAH the most common cause of acute abdomen was acute appendicitis followed by intestinal obstruction (11)

The most common symptoms are abdominal pain and vomiting whereas tenderness and guarding are the most frequent clinical signs. (14).

1.2 Statement of the problem

Acute abdomen is the most common presenting surgical emergency. It has been estimated that at least 50% of general surgical admissions are emergencies and 90% of them present with acute abdominal pain⁽³⁾⁽⁴⁾.

Surgeons managing a case of acute abdomen should be aware of the diverse etiologies of acute abdomen. As studies done in TAH acute appendicitis was found to have taken over at least in the urban setting of Ethiopia and the overall mortality of 15.3% is high and could be attributed to late presentation in which patients present with abdominal pain, vomiting, distension and the like with greater than 42% of them came after two days of onset of symptom and according to the study done in Nigeria LBO is leading cause of acute abdomen followed by Acute appendicitis.

Surgical acute abdomens are the commonly encountered emergencies in the practice of General surgery and for which emergency surgical operation commonly performed worldwide including in SPHMMC but so far there is no study done on pattern and outcomes of surgically treated acute abdomen in SPHMMC. The study is believed to have find out commonest cause of acute abdomen, presentation including their post-operative outcomes in this specific area and would also serve as a base for other studies⁽⁹⁾.

1.3 Significance of the study

Acute abdomen of surgically correctable causes, commonest indication for admission to surgical ward, is a common and challenging scenario for a physician working at ESOPD of SPHMMC since the referred cases are of complicated nature with myriad clinical sign and symptoms reflecting its tertiary level yet little information is available on the pattern of acute abdomen presentation and its surgical outcomes. This study accurately describes the presentation, pattern and various outcomes of surgical acute abdomen which can also serve as a baseline for the upcoming future researches in this topic.

2. Literature review

Worldwide

A prospective observational study was conducted in a large ED of a tertiary care center in India from July 2016 to December 2016. A total of 204 patients were included in the study. Almost half (52%) of the patients were in the age group of 15-30 years & 63% patients were male showing male predominance in the study. The common types of pain included dull aching (49%) and colicky (34%) with common associated symptoms being nausea (56%), vomiting (42%), urinary symptoms (18%), and loss of appetite (13%). The most common reasons for ED visits due to abdominal pain were ureteric colic (22%), acute gastroenteritis (11%), acid peptic disease (11%), UTI (7%), hollow viscus perforation (08%) and acute appendicitis (07%).⁽¹⁰⁾

In Africa

A study was conducted in Nigeria in two hundred and seventy-six patients presenting at the University of Ilorin Teaching Hospital, Nigeria emergency unit and managed by the general surgeons. Acute abdomen constituted 9.6% of total surgical emergency admissions with patients aged 16-45 years constituting 78.3%. The commonest cause of acute abdomen was appendicitis (30.3%) followed by intestinal obstruction (27.9%), perforated typhoid ileitis 14.9% and peptic ulcer disease (7.6%), respectively.⁽¹¹⁾

In Ethiopia

A retrospective analysis was undertaken on 229 cases of acute surgical abdomen surgically managed at Yirgalem hospital from January to December 1997. Small intestinal obstruction, acute appendicitis, large intestinal obstruction, Typhoid perforation, primary peritonitis, perforated gastro duodenal ulcer, abdominal tuberculosis and empyema of the gallbladder in descending order were the observed causes of acute surgical abdomen.⁽⁹⁾

Study conducted in Tikur Anbessa hospital shows that there were a total of 587 adult surgical emergency operations of which 2149(36.4%) was laparatomies for acute abdomen. Acute appendicitis was the leading cause of acute abdomen which accounts 52%, of whom 81(67%) was males and 41(33%) females. The majority of cases were in their 2nd and 3rd decades of life. Small bowel obstruction due to adhesions and volvulus were the leading causes of intestinal obstruction each accounting for 27%. Adhesion were the most frequent cause of small bowel obstruction (17/33). twelve's had had previous surgery, four were managed conservatively and 13 were operated out of which four had died. Perforated PUD was the 3rd most common cause of acute abdomen identified accounting for 21(9%) of cases.⁽⁴⁾

Four year retrospective study at Gondar university hospital shows that emergency laparotomies for nontraumatic acute abdomen were 511(43.3%) of all laparotomies. The leading operative diagnoses were small bowel obstruction (43.4%), appendicitis (34.6%) and large bowel obstruction Thirty three (49.3%) of patients with generalized peritonitis developed postoperative complications.⁽⁹⁾

On another study done to assess the prevalence and associated factors of surgical acute abdomen at Gelemso general Hospital, east Ethiopia using hospital based retrospective

study design from a total of 356 patients, 114 (32%) was surgical acute abdomen of whom 93 (83.2%) underwent operation. In this study the male to female ratio was 1.75:1. Their age ranges from 2 days to 79 years and a mean age of 27.7 ± 1.38 . Intestinal obstruction was the leading cause of surgical acute abdomen followed by appendicitis. Being Rural residency and age were significantly associated with surgical acute abdomen.⁽¹²⁾

3. Objective

3.1 General

The study is aimed to assess the pattern and outcome of surgically treated acute abdomen patients who were managed operatively in SPHMMC from Sep to Aug 2009 E.C.

3.2 Specific

- To assess common presentation of acute abdomen in SPHMMC from Sep to Aug 2009 E.C
- To identify possible causes of acute abdomen in SPHMMC from Sep to Aug 2009 E.C
- To look for outcomes of patients operated for acute abdomen in SPHMMC from Sep to Aug 2009 E.C

4. Methods and Material

4.1 Study area

The study was conducted in St. Paul's Hospital Millennium Medical College (SPHMMC). SPHMMC is one of the tertiary teaching hospital located in the capital of Ethiopia, Addis Ababa. It is located in the southwestern part of AA called Gullele around 6 km from the center Piazza, center of AA, Ethiopia.

As one of the largest Hospitals in the country it supplies different health services to patients of Addis Ababa and regional residents. These services include as an outpatient and inpatient departments. The outpatient department is organized into regular and emergency OPDs. The emergency OPD is currently working in different structures which are pediatrics EOPD, EGOPD, ESOPD, EMOPD and AaBET (for traumatic emergency). Among these departments any case who require emergency operations will be treated in surgical department excluding purely obstetric and gynecological cases.

As a regular OPD SPHMMC has many departments. This include general surgery, urology, orthopedic, neurosurgery, internal medicine with different specialties, OBGYN ,pediatrics, ENT, dentistry, maxillofacial surgery , ophthalmology, dermatology and venereology , psychiatry, ART and etc.

As an inpatients department it has many beds for patients who need to be treated on admission. This include medical ward, surgical ward, OBGYN ward and pediatrics ward. At the time of preparation of this text SPHMMC has more than 120 beds in the surgical ward in the main building(for pediatrics surgery, general surgery and urology patients) and more than 70 beds in AaBET Hospital for orthopedic and neurosurgical patients. Beside those, currently it is a place where different fellowships, residency and nursing programs are going on and researches underwent.

4.2 Study design

A retrospective descriptive cross-sectional study was conducted

4.3 Study period

The data was collected from March 12 – May 07 , 2018 G.C.

4.4 Population

4.4.1 Source population

All patients operated for surgical acute abdomen in SPHMMC Addis Ababa.

4.4.2 Study population

All patients operated for surgical acute abdomen from September - August 2009 E.C who fulfill inclusion criteria .

4.4.3 Sample size determination

The total sample size was calculated based on the standard formula for sample size determination using 95% confidence interval and 5% degree of freedom. From study done at Gelemso general Hospital proportion is taken 32%.

$$n = \frac{(Z_{\alpha/2})^2 P (1-p)}{d^2}$$

Where: n = required sample size

Z $\alpha/2$ = Critical value=1.96(Standard normal deviation usually set at 1.96 which corresponds to 95% confidence interval)

p= 0.32.

d= precision (marginal error) =0.05

Therefore: $n = \frac{(1.96)^2 (0.32*0.68)}{(0.05)^2} = 334$

Since the study population is 1538, the final sample size was determined as follow:

$$n_f = \frac{n}{[1+ n / N]} = \frac{334}{[1+334/1538]} \approx 274$$

4.5 Inclusion/Exclusion criteria

Inclusion criteria

- ✓ All charts of patients who are operated for surgical acute abdomen in the study period

Exclusion criteria

- ✓ Pediatric age group

4.6 Study variable

4.6.1 Independent variable

- ✓ Age

- ✓ Sex
- ✓ Residency
- ✓ Occupation
- ✓ Duration of illness
- ✓ Physical finding
- ✓ Preoperative diagnosis
- ✓ Type of procedure done

4.6.2 Dependent variable

- ✓ Outcomes of acute abdomen
- ✓ Common presentations of acute abdomen

4.6.3 Operational definition

- Pediatric age –less than 14 years old
- Acute abdomen - previously undiagnosed pain sudden in onset and less than 7 days duration
- Presentation- the complaint that the patient has and physical finding as he/she come to health professional
- Outcome-the health status of patient after operated while he/she is at hospital
- Urban – Addis Ababa
- Rural- outside Addis Ababa

4.7 Data collection

Card numbers of patients operated from non-traumatic acute abdomen and admitted to surgical ward for treatment was retrieved from log books at ESOPD, HMIS log book, admission office, discharge book and operation room book. The card numbers were given to record officers and the charts was retrieved and data will be collected.

4.8 Data processing and analysis

Data was coded, entered and cleaned using SPSS version 21 statistical software.

4.9 Ethical clearance

Data collection was started after getting a permission letter from medical vice provost. Confidentiality of the records was maintained throughout the study period. Reports was not included names and identifiers of patient.

4.10 Dissemination of findings

The report will be sent to department of surgery so that the department gets due attention and uploading the final result on the web so that it serves as a spring board for future researches in the same topic on this area.

4.11 Data quality assurance

Data were checked for completeness and crosschecked charts with OR book.

5. Result

5.1 Sociodemographic

A total of 274 charts were included in the giving the response rate of 100%. Of these 141 (51.5%) were males and 133 (48.5%) were females and address were identified and found to be 145(52.9%) from urban and 129(47.1%) were from rural area with majority of age

group in the range 14- 20(54.4%). 125 (45.6%) patients involved in this study were students.

Table 1: Sociodemographic of patients with acute abdomen at SPHMMC from Sep to Aug 2009 E.C

variables		Freq	Percent
Sex	Male	141	51.5
	female	133	48.5
Address	Urban	145	52.9
	Rural	129	47.1
Age	14-20	149	54.4
	21-30	53	19.3
	31-40	22	8
	41-50	19	6.9
	51-60	22	8
	>61	9	3.3
Occupation	Student	125	45.6
	Farmer	47	17.2
	Merchant	35	12.8
	Servant	34	12.4
	Housewife	25	9.1
	Other	8	2.9

5.2 Presentation

Abdominal pain and vomiting were the most frequent symptoms (100% and 76.6% respectively) whereas tenderness and guarding were the most frequent clinical signs found (100% and 58%). Majority of patients came to hospital with in 12hrs to 5 days of onset of the symptoms.

Fig 1: Duration of illness of patients with acute abdomen at SPHMMC from Sep to Aug 2009 E.C

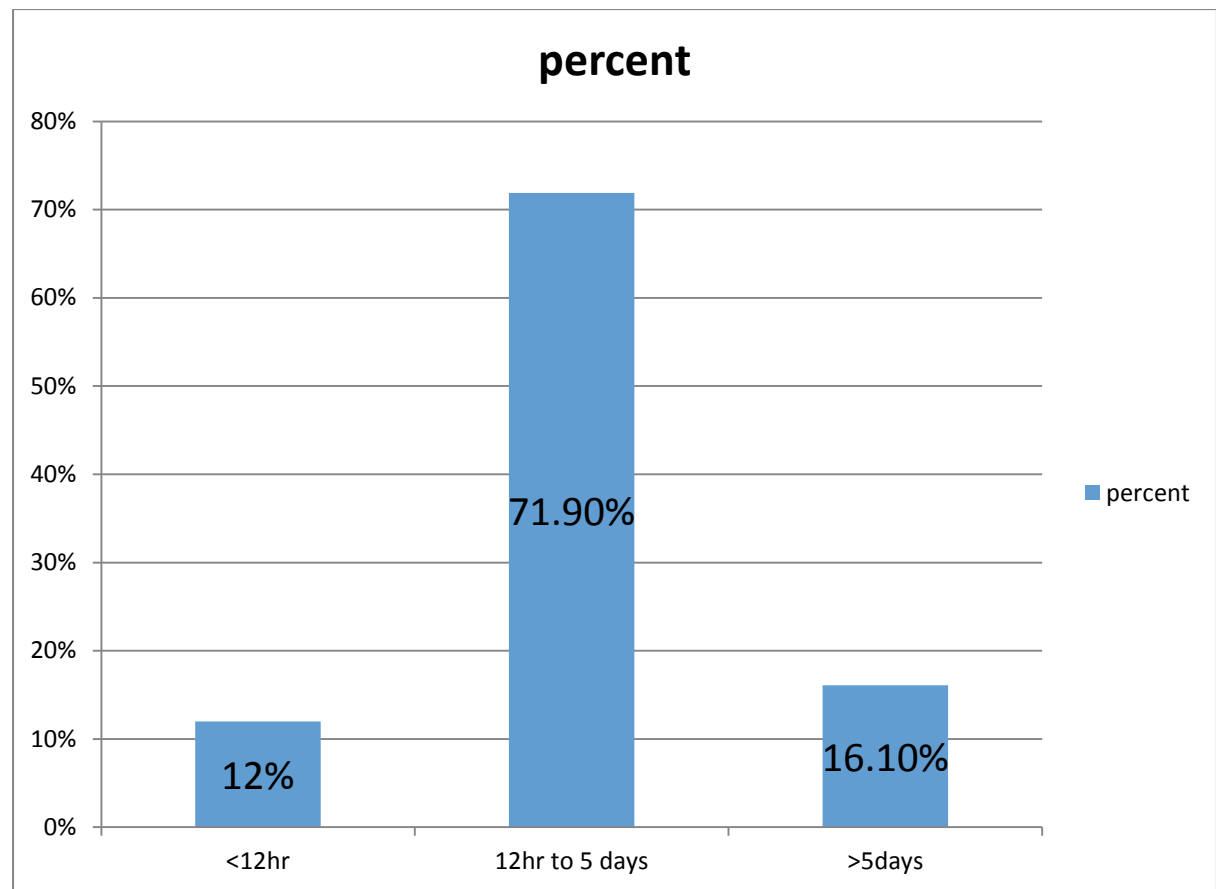


Table 2: Presentation of patients with acute abdomen at SPHMMC from Sep to Aug 2009 E.C

Symptoms			Signs			
	Freq	Percent			Freq	Percent
Abdominal	274	100	PR	Tachy	161	58.8

pain				Normal	113	41.1
Vomiting	210	76.6	RR	Tachy	65	23.7
				Normal	209	76.3
Distention	33	12.0	T	Fever	21	7.7
				Normal	253	92.3
Failure to pass	26	9.5	BP	Hyper	5	1.8
				Normal	243	88.7
				Hypo	26	9.5
Diarrhea	11	4.0	-	-	-	-
Ls. of appetite	131	47.8	-	-	-	-

	freq	Percent
RUQ	6	2.2
LUQ	2	.7
RLQ	176	64.2
LLQ	11	4
Generalized	79	28.8

5.3 Diagnosis

Appendicitis is the leading diagnosis 191 (69.7%) with differentials Acute appendicitis 154 (56.34%), Appendiceal abscess 17 (5.63%) and perforated appendix 20 (7.75%) followed by Intestinal obstruction 17.1% of the study population the leading cause being gangrenous sigmoid volvulus 36 (13.09%) and PPUD 36 (13.13%).

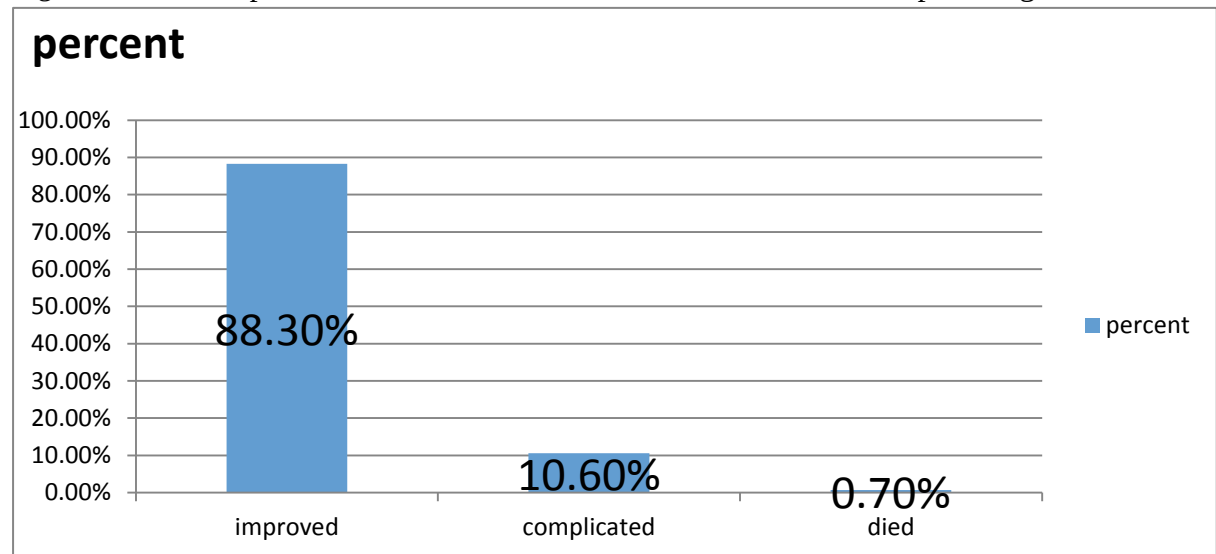
Table 3: Diagnosis of patients with acute abdomen at SPHMMC from Sep to Aug 2009
E.C

		Freq		Percent	
Appendicitis	Acute	154	191	56.34	69.7
	Abscess	17		5.63	
	perforated	20		7.75	
LBO	GSV	36	40	14.2	
	CRC	4			
SBO	Adhesion	3	7	2.9	
	Hernia	2			
	Intussusception	1			
	Other	1			
Peritonitis	PPUD	36	54	19.7	
	PAppend	18			

5.4 Outcome

All patients were operated and most of them got benefit from the surgery 242 (88.7%), complicated 29 (10.6%) and death 2 (0.7%).

Fig. 2: outcome of patients with acute abdomen at SPHMMC from Sep to Aug 2009 E.C



5.5 Procedure

Majority of patients with acute abdomen in this study do have acute appendicitis for whom appendectomy was done. The details of respective procedure for each of acute abdomen are listed in the table 4 below.

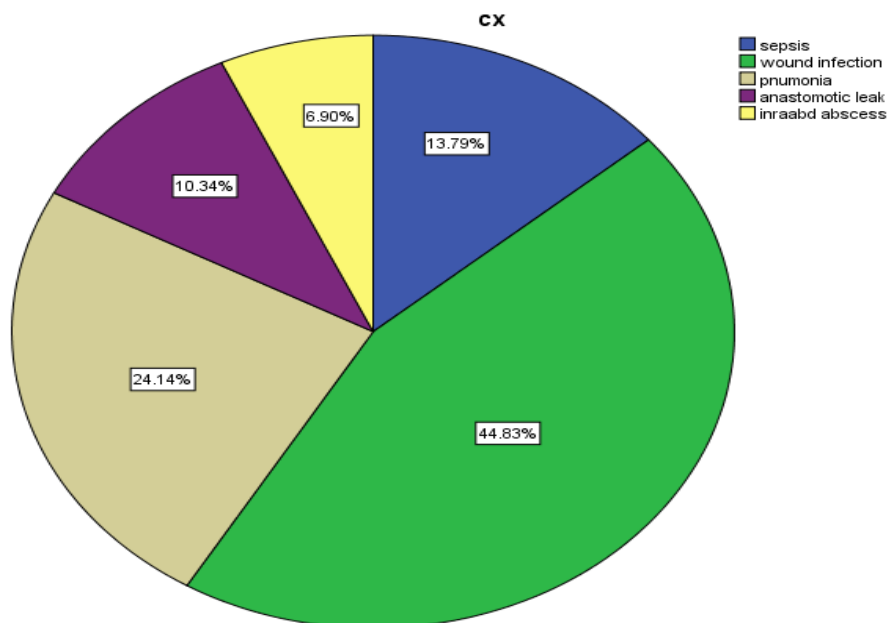
Table 4: procedure of patients with acute abdomen at SPHMMC from Sep to Aug 2009 E.C

	Freq	Percent
Appendectomy	159	58.0
Appendectomy + Abscess drainage	15	5.5
Exploration	3	1.1
Laparotomy + colostomy	24	8.8
Laparotomy + Omental pach	36	13.1
Laparotomy + REEA	20	7.3
Lavage + appendectomy	17	6.2

5.6 Complication

From those who underwent respective surgeries, 29 had complications, the leading being surgical site infection 13 (44.8%) followed by Hospital acquired pneumonia 7 (24.1%) and sepsis 4 (13.8%).

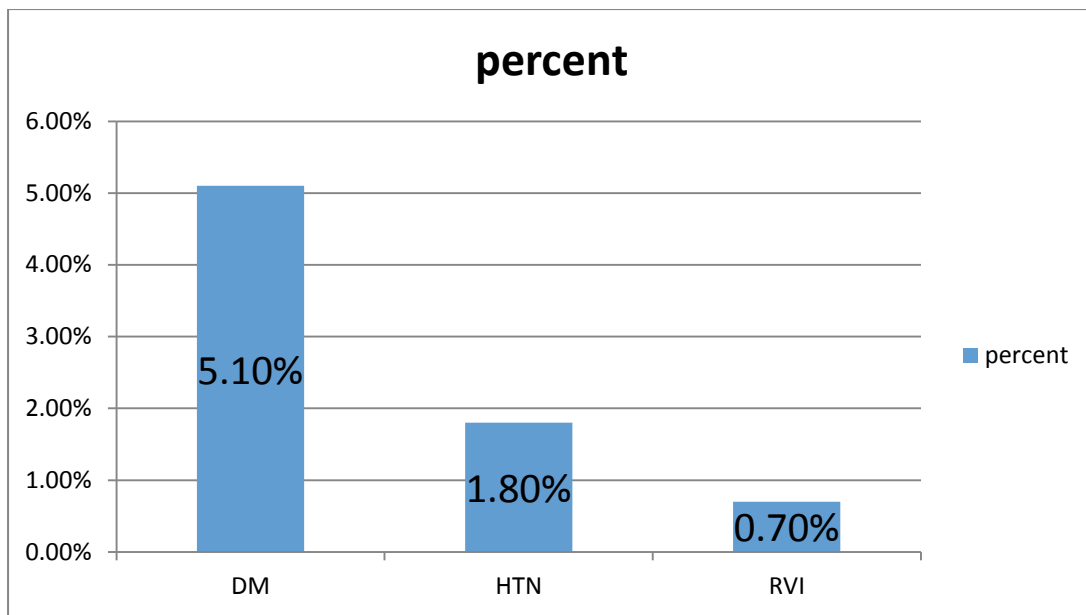
Fig. 3: Complications of patients with acute abdomen at SPHMMC from Sep to Aug 2009 E.C



5.7 Comorbidity

Of all patients who underwent emergency surgery 5.1% of them have comorbid illness, most frequent being diabetes mellitus 2.6% followed by hypertension 1.8% and RVI 0.7%.

Fig. 4: comorbidities of patients with acute abdomen at SPHMMC from Sep to Aug 2009 E.C



6. Discussion

There were 274 patients of which 141(51.5%) were males and 133(48.5%) were females. Abdominal pain (100%) and Vomiting (76.6%) were most common complaints. Acute appendicitis was most common cause accounting for 69.7 % of the patients, followed by intestinal obstruction (17.1%). SSI and HAP were most common postoperative complication.

There are very few studies done on the general pattern of acute abdomen in Ethiopia and few studies on specific causes of acute abdomen. Hence, this study was focused on assessing the presentation and outcome of acute abdomen in the area using a one year back secondary data from the SPHMMC. In this study emergency surgical operation performed for 274 non-traumatic surgical acute abdomens and of these, 141(51.5%) were males and 133(48.5%) were females. Fifty two point nine percent of all were urban and 47.1% were rural residences. Majority of patients were in their 2nd and 3rd decades of life, which was similar with previous studies done in TAH, NRH and other African countries(2, 3, 4).

Almost similarly with study in TAH, abdominal pain (100%), vomiting (76.6%), constipation (9.5%) and abdominal distension (12%) were the commonest symptoms in patients with acute abdomen (4) .

Acute appendicitis was found to be the leading cause of non-traumatic surgical acute abdomen leading to emergency operation in this study. The majority of the cases with acute appendicitis were from urban and in their 2nd and 3rd decades of life, which agree with other studies done in TAH, NRH, and Gondar Hospital but in the contrary to studies in other area it has equal male to female ratio(2, 3, 4,6). Bowel obstruction was the second most common cause of nontraumatic acute abdomen with 17.1% of which LBO 14.2 followed by 2.9% SBO which was similar with study done in TAH(4). Gangrenous sigmoid volvulus accounting 36(12.78%) from LBO was the leading cause. This is in agreement with studies done in TAH, in which sigmoid volvulus constitutes 27%(4). In this study most of patients who developed peritonitis at time of operation was resulted from perforated PUD (13.13%) followed by perforated appendicitis (6.46%).

The most frequent postoperative complication was wound infection 4.7% as studies done in TAH, GRH & NRH (2, 3, 4) and followed by pneumonia (2.6%) , sepsis (1.5%), anastomotic leak (1.1%) and intraabdominal abscess(0.7%) which is in contrary to studies mentioned above which was sepsis ranked the second(7).

7. Limitation of the study

Majority of charts were not complete so that i was compelled to reduce the number of variables.

8. Conclusion

In this study i noticed the most common symptoms are abdominal pain and vomiting whereas tenderness and guarding are the most frequent clinical signs and emergency surgical operation for nontraumatic acute abdomen particularly for acute appendicitis was found to be the most common surgical emergency operations performed in. Surgical site infection, pneumonia and sepsis were the most common postoperative complications.

9. Recommendation

- ✓ SPHMMC department of surgery has to train managing team on infection prevention
- ✓ SPHMMC and other stakeholders should create awareness at community level on acute abdomen so that they came early
- ✓ Interns and residents should have proper chart documentation

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11. Annex

Questionnaire

1. Sex M_____ F_____
2. Age_____
3. Address Urban_____ Rural_____
4. Presenting complaint of the patient
Vomiting _____ Abdominal pain _____ Diarrhea _____ Distention _____
Constipation _____ Anorexia _____ Nausea _____ Others _____
5. Duration of illness
< 12hrs _____ 12 hrs-5 days _____ . > 5 days _____
6. Physical funding
General vital sign PR _____ T _____ . Bp _____ RR _____
7. Abdominal funding
Normal _____ Distended _____
Localized tenderness RUQ _____ LUQ _____ RLQ _____ LLQ _____
Generalized tenderness _____
Guarding and rigidity _____
Bowel sound normal _____ hyper active _____ hypo active _____ Absent _____
Per rectum mass _____ .tenderness _____ .loaded with stool _____ bleeding _____ empty _____
8. Working diagnosis (pre-operative diagnosis)
 - 8.1 Appendicitis
Acute appendicitis _____ Appendiceal abscess _____
Perforated appendix _____
 - 8.2 Intestinal obstruction
 - A) Large bowel obstruction
Sigmoid volvulus Gangrenous _____ Non gangrenous _____
Colonic cancer _____ Ileo- sigmoid knotting _____ Others _____
 - B) Small bowel obstruction
Primary volvulus gangrenous _____ Non- gangrenous _____
Adhesion/band gangrenous _____ Non - gangrenous _____
Hernia gangrenous _____ Non - gangrenous _____
Intussusceptions gangrenous _____ Non - gangrenous _____
Others _____
 - 8.3 Peritonitis
Following perforated PUD
Following perforated appendix
Typhoid perforation
Primary peritonitis
Others _____

9. Treatment

Pre-operative treatment_____ Type of anesthesia spinal_____general_____

Type of procedure done_____. Final diagnosis_____

Post-operative treatment_____

10what is the outcome Improved _____ Same _____ Complicated_____ Died _____

11. Was there any complications during operation and post-operatively in ward stay? If there was

-Sepsis _____. Wound infection_____

- Pneumonia _____.Anastomotic leak_____

- Intra-abdominal abscess_____other_____

12.Comorbid illness Yes_____ No_____

13. If yes to no12, DM_____ HTN _____ HIV _____ Other_____