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PRESCRIPTION AUDIT OF VARIOUS ANTIBIOTICS GIVEN IN CASE OF ACUTE APPENDICITIS OF ACUTE ABDOMEN TO PATIENTS ADMITTED IN SURGICAL WARDS OF A MEDICAL COLLEGE OVER SIX MONTHS: A RETROSPECTIVE STUDY.

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ABSTRACT

Introduction: Acute abdomen is a condition described in surgery as acute pain in abdomen. Most common cause of it is acute appendicitis unless otherwise specified.[1] It can be due to infection due to some obstruction in the lumen of appendix. Deficiency of dietary fiber and increased consumption of refined carbohydrates may be important[2] Treatment is emergency appendectomy if patient presents in the beginning of pain in abdomen before formation of any appendicular abscess which is treated conservatively by Oscner sheren regime including antibiotics and intravenous fluids.[3] In either of condition whether operative or conservative treatment, antibiotics do occupy an important place in treatment. ***Objective:***To evaluate what antibiotics are given in treatment of acute appendicitis in this hospital routinely and how much they are rational , was the main objective of this study. ***Material & Methods:***It was a retrospective study in which case papers of 188 patients of acute appendicitisadmitted in hospital over six months from 1stjune 2012 till 30thdecember 2012 were analyzed for clinical, biochemical,& microbiological reports, Antibiotics prescribed, their dose,duration,number of antibiotics given simultaneously, route of a drug administration, duration of stay in hospital etc. ***Result:*** Out of 188 patients case papers examined,over 90 % patients were prescribed two antibiotics combination of Ceftrioxone or Cefotaxime &, Metronidazole, average duration of stay was 7.5 days, around 75.1 % patients were given more than two antibiotics adding Gentamicin empirically. Being a common clinical entity, 75% patients were treated irrationally. Average antibiotic prescribed per patient were 2.3.Average hospital stay was 7.1 days. **Conclus*ion*-**Acute appendicitis is a quite common condition in general surgery, requiring routinely third generation Cephalosporin and Metronidazole, yet antibiotic policy should be developed in tertiary care center to avoid irrational uses of antibiotics such as combining Aminoglycoside with third generation cephalosporin leading to emergence strains. Antibiotic policy should be displayed in surgery ward to promote rational prescription.

KEYWORDS: Appendicitis, Cefotaxime, Metronidazole, Gentamicin, Amikacin, Rational, Irrational use of Antibiotics.

INTRODUCTION

Acute appendicitis is the most common cause of acute abdominal pain.[1]

It is due to obstructive or non obstructive reasons associated with infection and inflammation. In most of the cases it is due to obstructive cause which can be a faecolith or even worms, enterobius vermiformis.It is associated with deficiency of dietary fibres.[2]

It is either treated by surgical treatment (appendectomy) or conservative treatment. When patient presented late or an appendicular mass is formed which is treated by conservative Ochsner Sherren regime giving iv fluids and antibiotics, only to follow interval appendectomy after the mass has subsided[3] Whether it is uncomplicated or complicated like perforated, it requires antibiotics .generally a third generation cephalosporin like Ceftrioxone plus Metronidazole combination is given. In case of perforation or appendicular mass formation, gentamicin, an Aminoglycoside is also added to prevent septicemia.[4]

Generally surgeons are more interested in a surgical cure of the condition than the medical treatment,choice of drugs, duration of treatment ,combination of drugs remains empirical.

Studies on rational antibiotic usage in treatment of acute appendicitis in hospital were not done. Therefore it was decided to conduct this study in the surgery ward. to justify the choice, of antibiotic, dose, frequency and duration of treatment.

MATERIAL AND METHODS

Patients admitted in hospital for acute appendicitis.

Inclusion criterion: Patients admitted in hospital for acute appendicitis, above 8 years diagnosed clinically and pathology test confirmation.

Exclusion Criterion: patients admitted in hospital for acute abdomen diagnosed other than acute appendicitis.

Study design: Retrospective crossectional.

Duration of study: Six months case papers collected from medical record room of hospital. From june 2012 till december 2012.

METHOD

This retrospective cross sectional study was done by analyzing 188 patients case records of acute appendicitis patients selected after applying inclusion and exclusion criterion .The period was of six months from 1june 2012 till December 2012. This study was done after taking approval from Institutional ethics committee.

Following points were noted in case papers

1. Demographic data, Age
2. Sex
3. Type of treatment surgical or conservative
4. Type of antibiotics
5. Number of antibiotics
6. Blood test and urine test
7. Ultrasonography
8. Dose duration of antibiotics
9. Duration of stay in hospital

Results fill in the blank approx

Total patients were 188(n=188=100%)

1. Sex: Male =122(64.8%)
Female= 66(35.1%)
Male female ratio was 1.84:1

2. Age: 0 to 15=28(15.5%)
15-30=103(54.7%)
>30=56(29.7%)

3. BLOOD TEST

Total & Differential count more than 10000=135(71.8%)
T &D between 6000-9000=52(27.6%)

4. Urine normal =152(80.8%) No urinary tract infection
Urine UTI present =13(6,9%)

5. Histopathology report
Inflamed appendix=178(94.5%)
Normal appendix = 10(5.5%)

6. USG positive =114(60.6%
Normal=74(39.3%)

7. Mean duration of stay in hospital=7.1 days,
Can be discharged in =72 hours

8. Average number of antibiotics prescribed=2

9. Most commonly prescribed antibiotics=
Metronidazole in =188(100%)
Ceftrioxone 141(75%)
Cefotaxime= 47(25%
Gentamicin =121(64.3%)
Amikacin = In 20(10.6%)
Combination of third 3rd generation cephalosporin plus Metronidazole = 100% (two drugs combination).

Combination of third 3rd generation cephalosporin plus Metronidazole plus Aminoglycoside = 75 %(three drugs combination).

Piperacillin plus Tazobactum was given in=3 (1.5%)
monotherapy was not given in any case.

Route of administration

Intravenous for initial 3 days=188(100%)
Intravenous for 8 days (conservative)=29(15.4%)
Oral antibiotics= 4.5 days following IV antibiotics

10. Appendectomy done in =159 (84.5%)
Conservative treatment is given in =29(15.4%)
Interval appendectomy was done in =29(15.4%)
Laparoscopic appendectomy done in =2(1%)
Abdominal appendectomy was done in =186(98.9%)

Table 1 antibiotics used in patients of appendicitis

S No	Antibiotic	Used in no.of pts	%	Average duration
1	Ceftrioxone IV	141	75	3.1days
2	Cefotaxime IV	47	25	3.5
3	Metronidazole IV	188	100	3.3
4	Gentamicin IV	121	64.3	3.2
5	Cefixime oral	136	72.3	3.3
6	Amoxiclav oral	43	22.8	3.1
7	Ornidazole oral	132	70.2	3.4
8	Ciprofloxacin oral	26	13.8	3.3

9	Amikacin IV	20	10.6%	3.2
10	Pipera+tazo IV	3	1.5%	3.3

Table 1. Rational versus empirical use of antibiotics

S. No.	Antibiotic	Used in	Dose		Frequency	
1	Ceftrioxone, IV	141	Appropriate 141	Inappro 0	Appropriate 140	Inappropriate 0
2	Cefotaxime ,IV	47	40	7	40	7
3	Metronidazole,IV	188	180	8	180	8
4	Gentamicin,IV	121	21	100	110	11
5	Ciprofloxacin IV	26	20	6	20	6
6	Tazo Pipera IV	3	2	1	2	1
7	Amikacin IV	20	4	16	16	4
8	Cefixime oral	136	132	4	132	4
9	Amoxiclav oral	20	10	10	10	10
10	Ornidazole oral	132	120	12	120	12

Table2 Lab Tests & Abdominal Ultrasonography Test

S. No.	T&D	N	%	Urine infection	n	%	USG	N	%
1	>10000	135	71.8%	Infection +ve	13	6.9%	positive	101	53.7%
2	<6000	52	27.6	Infection negative	152	80.8%	negative	74	39.3%
							Not done	13	6.9%

Observations

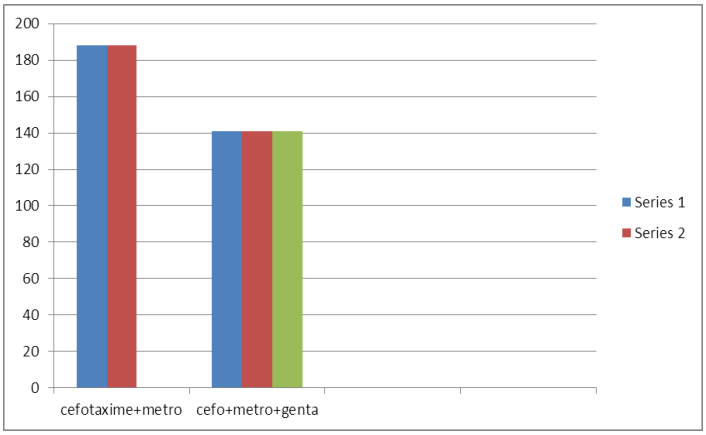


Chart no 1 showing use of antibiotics in patients of appendicitis

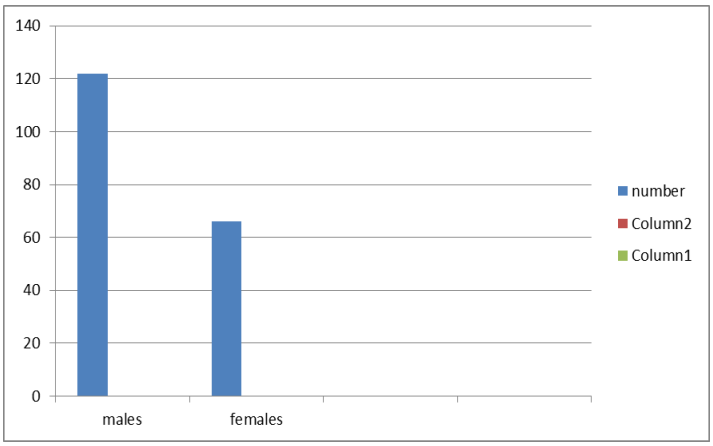
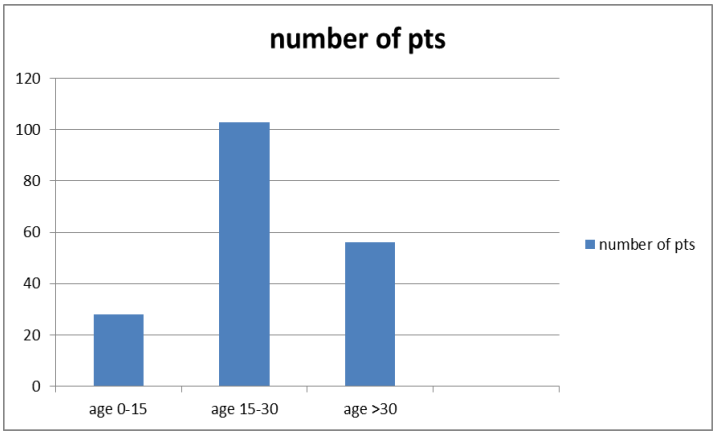


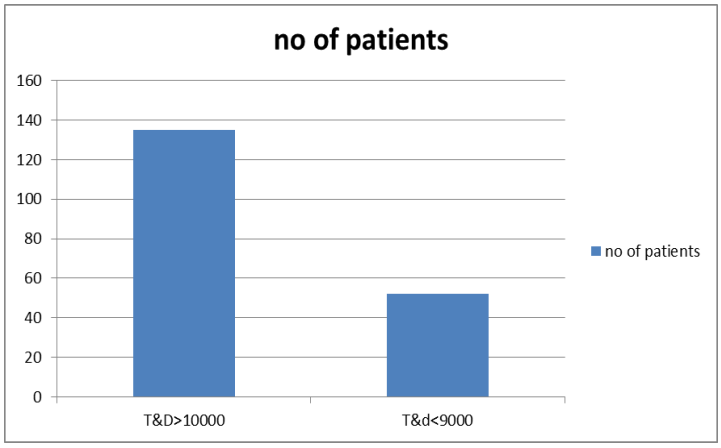
Chart no 2. sex distribution

Total patients were 188(n=188=100%)
Male =122(64.8%)
Female= 66(35.1%)



Age distribution of patients of appendicitis

Age: 0to 15=28(15.5%)
15-30=103(54.7%)
>30=56(29.7%)



Laboratory tests

Blood test (Total & Differential count more than 10000)=135(71.8%)
6000-9000=52(27.6%)

DISCUSSION

Most of studies on appendicitis are carried by surgical residents who have a limited knowledge of pharmacology & rational antibiotics use. Whatever they know about antibiotics had either origin from their second year pharmacology classes or they learn from their seniors in surgery who also have passed through the same situation .Their main focus remains on surgical outcome to cure of appendicitis, so this current project was undertaken to know the rational status of usage of antibiotics in treatment of acute appendicitis. Here the main focus was on rational use of antibiotics, number of antibiotics, choice of antibiotics, their dose and duration, route of administration of antibiotics, from the point of view of WHO.[4]

As soon as the patient of acute appendicitis or acute abdomen is admitted in the surgery ward of the hospital, he or she is started intravenous fluids and intravenous antibiotics as prophylaxis.[6] In the mean time, patient's blood sample are sent for total and differential count and urine test for detection of urinary tract infection, if any .A whole abdomen ultrasonography is also done to rule out other possibilities of acute abdomen .If clinical signs and investigations support the diagnosis of acute appendicitis then emergency appendectomy either abdominal or laparoscopic is performed , cut appendix is later sent for histopathology laboratory to confirm the diagnosis to rule out malignancy or to confirm the condition . If any appendicular mass is suspected then conservative ochsner sherren regime including antibiotic course is given for average 9.1 days. After resolution of appendicular mass, an interval elective appendectomy operation is undertaken after a gap of average 30 days.

After the operation of appendectomy the patient can be discharged within 72 hours but in medical college hospital setup is kept for average 7.1 days for teaching medical students.

During postoperative period if it s a case of uncomplicated appendicitis (90.2%) then there is no need of any antibiotics but still patients are given antibiotics to avoid hospital acquired infection.

However in case of perforated appendicitis (in 9.8% cases) , definitely full course of antibiotics is given.

In 100% cases, two antibiotics, intravenous Ceftrioxone (75%) or Cefotaxime (25%) plus Metronidazole (100%) combination is given.

In 75.1% cases an Aminoglycoside ,Amikacin(10.6%) or mostly Gentamicin (64.3%) is added in cases of complicated or infected or ruptured appendicitis .This is quite irrational as Aminoglycoside are active against gram negative bacteria while third generation Cephalosporins are also active against gram negative bacteria, This is duplication & irrational.

There was no monotherapy (single antibiotic) in any case in uncomplicated or complicated cases.

Bangari et al suggest that in case of clean, uncomplicated appendicitis, postoperative antibiotics are unnecessary.[8]

The aim of antibiotic protocol in case of appendicitis is difficult to follow considering its emergency nature requiring surgical intervention.

However the expert committee of WHO on rational use of antibiotics (1985) suggests that the rational use of drugs requires that patients receive medications appropriate to their clinical needs, in dozes that meet their individual requirements for an adequate period of time and at the lowest cost to them and their community.[5],,

In this retrospective study we found that because of its common occurrence and experience surgeons do prescribe Ceftrioxone and Metronidazole combination,added with gentamicin in 75% of cases, however dose and duration of antibiotics is generally not taken care This leads to emergence of drug resistance.

At present there is no standard protocol or guideline on use of antibiotics in case of appendicitis. there is a need to develop such protocol to avoid emergence of drug resistance in microorganisms.

CONCLUSION

There should be regular classes by pharmacologists to residents of surgery department on rational use of antibiotics because the patients of acute appendicitis is first seen by residents only, If they are aware of rational use of antibiotics and antibiotic policy /protocol then the ultimate beneficiary would be the patient.

A definite antibiotic policy should be first formed, displayed, reinforced by repeated interaction with pharmacologists would be of great help.

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