



Original Research Article

## Commonest Organisms and Antibiotic Sensitivity in Peritonitis Due To Duodenal Ulcer Perforation in Krishna Hospital, Karad

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Received: 12/06//2014

Revised: 05/07/2014

Accepted: 08/07/2014

### ABSTRACT

#### Aims and Objectives :-

- 1.To detect commonest organisms in peritonitis due to duodenal ulcer perforation and to find out antibiotic sensitivity pattern to form antibiotic policy for peritonitis due to duodenal ulcer perforation.
- 2.To see response of patients after starting antibiotics according to the culture and sensitivity report.

#### Materials and Methods:-

Patients admitted with Duodenal Ulcer Perforation in Krishna Hospital in Department of Surgery from May 2011 to May 2013 were included in this study.100 patients were studied during this period.

**Inclusion criteria:** All patients with Duodenal Ulcer Perforation.

**Exclusion criteria:** 1)patients admitted with deranged vital parameters and not operated.  
2)Peritonitis due to other Hollow Viscus Perforation.

#### Discussion :-

First 70 patients were given antibiotics empirically and next 30 patients were given antibiotics according to the culture and sensitivity report. Accordingly, most commonest organism, antibiotic sensitivity pattern, response of the patients after giving antibiotics according to culture and sensitivity with respect to post operative complications and hospitalization were noted.

#### Conclusion:-

- 1 ) E.coli was the most commonest organism isolated from peritonitis due to duodenal ulcer perforation.
- 2 ) Maximum cultures were found sensitive to Piperacillin+Tazobactam and Cefotaxim.
- 3 ) Hospitalization and morbidity of patients was significantly reduced in patients treated with antibiotics according to culture and sensitivity.

**Key words :** Duodenal ulcer perforation peritonitis, E.coli , Piperacillin+Tazobactam.

### INTRODUCTION

Peptic ulcer perforation is one of the most dramatic complications of peptic ulcer disease and in spite of the modern management it is still a life threatening

event in life. It is one of the most common acute abdominal emergencies faced by surgeons, which in usual circumstances can be easily diagnosed and treated.

With use of anti-ulcer drugs like H2 receptor antagonists, PPI, the incidence of elective surgery for uncomplicated duodenal ulcer has declined significantly, however surgery remains the only modality of treatment for perforated duodenal ulcer. In modern era of widespread use of antibiotics in the pre-operative and post-operative period, the incidence of mortality has reduced in nonsterile peritonitis. In this study, we will be studying commonest organisms and their antibiotic sensitivity in peritonitis due to duodenal ulcer perforation.

## **MATERIALS AND METHODS**

This dissertation is designed to study commonest organisms and their antibiotic sensitivity in our hospital in relation to the bacteriological profile and other ecological factors that we encounter.

It is necessary to find out what etiological factors operate in our hospital and so along with the patients, operation theatres, wards and staff concerned will be scrutinized. Finally, it is necessary to look into antibiotic sensitivity and culture done to help ascertain the efficiency of presently used antibiotics and to form antibiotic policy in peritonitis due to duodenal ulcer perforation.

### **Source of data:-**

Patients will be assessed in three phases:

**1.Preoperative phase:** age, sex, economic status, education, occupation, preoperative stay at the hospital and preoperative focus of infection, built, nutritional status, past history of tuberculosis, diabetes mellitus, ihd, jaundice.

**2.Intraoperative phase:** in this phase, indication of operation and nature of operation ie. elective or emergency was noted. In this phase, colour and amount of the peritoneal fluid, site and size of the duodenal ulcer perforation was studied. Bacteriological culture and swabs was taken.

**3.Post-operative phrase:** In this phase, response of the patients to antibiotics after culture and sensitivity reports in terms of wound infection, morbidity (infections, pneumonia, septicemia.) was studied.

Patients admitted with Duodenal Ulcer Perforation in Krishna Hospital in Department of Surgery from May 2011 to May 2013 were included in this study. 100 patients were studied during this period.

**Inclusion criteria:** All patients with Duodenal Ulcer Perforation.

**Exclusion criteria:** 1) patients admitted with deranged vital parameters and not operated.

2) Peritonitis due to other Hollow Viscus Perforation.

### **Collection of culture and transport :**

Culture is collected immediately after opening the peritoneum.

Culture sample is collected under sterile and all aseptic precautions. It can be taken with cotton swab or in the sterile test tube. It has to be stored in refrigerator at 6C. It is transported from OT to Microbiology department at room temperature, should not be kept at room temperature for more than 1 hour.

### **Processing:**

1<sup>st</sup> day: Microbiology and Culture inoculation.

2<sup>nd</sup> day: If growth is present then organisms are identified by performing biochemical tests followed by Antibiotic sensitivity.

3<sup>rd</sup> day: Results of organism isolated and its antibiotic sensitivity are ready.

## **DISCUSSION**

Today also ulcer perforation remains the dramatic disaster, that it was a century ago. Although resuscitative and surgical capabilities have continued to improve, perforation is still a major threat for the ulcer patient. This review has been compiled to bring together the experiences of many observers from many quarters with this common problem.

The present study includes 100 cases of duodenal ulcer perforation admitted in Krishna Hospital during study period. In this study, more stress has been given to detect commonest organisms in peritonitis due to duodenal ulcer perforation and to find out antibiotic sensitivity pattern to form antibiotic policy for peritonitis due to duodenal ulcer perforation.

### Organisms isolated from peritoneal fluid culture :

In present series of 100 patients, E.coli was isolated in 44 patients, klebsiella in 16 , Acinetobacter, Candida and Staphylococcus aureus in 1 patient each. Culture was found sterile in 41 patients. Thus, E.coli was most common organism isolated. Out of those 44 patients , 29 were male and 15 were female showing its predominance in males as shown in Table 1.

Table 1 : Organisms isolated from peritoneal fluid culture.

Organisms	No. of cases	Percentage
E.coli	44	44
Sterile	41	41
Klebsiella	16	16
Others	3	3

Others include Acinetobacter, Candida and Staphylococcus aureus.

According to the study conducted by Dale M. Mosdell, M.D., Don M. Morris, et al <sup>(1)</sup> out of 480 cases studied of peritonitis, E.coli was isolated amongst 201 cases followed by non-enterococcal Streptococcus, Pseudomonas and Klebsiella.

Hours taken to operate and peritoneal fluid culture has got important role in culture of organisms. Out of 48 patients operated in 1<sup>st</sup> 6 hours , 25 patients had culture sterile and 23 patients had culture positive for E.coli , klebsiella. Whereas , out of 40 patients operated within 7 to 12 hours 31 patients had culture positive for E.coli, klebsiella , Acinetobacter, Candida and Staphylococcus aureus and 9 were sterile. Thus organisms were found to be isolated more in patients

who were operated within 7 to 12 hours as shown in Table 2.

Table 2 : Distribution of hours to surgery and organisms isolated :

Hours to Surgery / Organisms	E.coli	Klebsiella	Sterile	Others
0-6	18	5	25	0
7-12	19	9	9	3
13-24	5	1	7	0
25-48	0	1	0	0
49-72	2	0	0	0

Others include Acinetobacter, Candida and Staphylococcus aureus.

### Antibiotic sensitivity :

In our present series, maximum sensitivity was found to Piperacillin+Tazobactam ( 51 patients ) followed by Cefotaxim (49 patients ) and Cefoperazone and Ceftazidime as shown in Table 3.

Table 3 : Antibiotic Sensitivity

Antibiotics	No.of cases	Percentage
Piperacillin-Tazobactam	51	51
Cefotaxime	49	49
Cetazidime	25	25
Cefoperazone	48	48
Ceftriaxone	31	31
Ciprofloxacin	34	34
Amikacin	32	32
Others	22	22

Others includes Ticarcillin, Gentamycin, Netilmycin, Tetracycline, Ceftioxime, Tigecycline, Imipenem, Meropenem, Artapenem.

First 70 patients in this study were treated empirically with either Piperacillin+Tazobactam, Cefotaxim or Ceftazidime and next 30 patients were given antibiotics according to the culture and sensitivity reports of the first 70 patients. Complication rate (e.g. Bronchopneumonia, sepsis, wound infection etc.) was more when antibiotics were given empirically and the same complications reduced when antibiotics were given according to the culture and sensitivity reports as shown in Table 4.

Table 4 : Post-operative complications after giving antibiotics empirically and according to culture and sensitivity.

Complications / Antibiotics given	Empirically	Culture sensitivity	Total
Bronchopneumonia	6	2	8
Wound infection	8	1	9
UTI	1	0	1
Burst Abdomen	1	1	2
Sepsis	4	2	6
Leak	2	0	2
Expired	4	1	5

The outcome of patients was also influenced. 66 patients ( 94.28 % ) were discharged and 4 patients ( 5.72 % ) were expired with antibiotics given empirically.

29 patients ( 96.67 % ) were discharged and 1 patient ( 3.33 % ) was expired when antibiotics were given according to the culture and sensitivity Table 5.

Table 5 : Outcome after giving antibiotics Emperically and according to Culture sensitivity

Outcome/antibiotics given	Emperically	Percentage	Culture sensitivity	Percentage
Discharge	66	94.28	29	96.67
Expired	4	5.72	1	3.33
Total	70	100.00	30	100.00

In our present series of 100 patients, Cefotaxim was given in 51 patients, Piperacillin+Tazobactum was given in 40 patients and Ceftazidime was given in 9 patients. According to the study conducted by L Reed, DO; Chief Editor: Julian Katz, MD (2011) Cefotaxime is considered the treatment drug of choice. Initial coverage should include gram-negative enteric bacteria and gram-positive cocci, which are responsible for 90% of infections. (2) Cefotaxime is effective against 98% of causative organisms. Anaerobic, pseudomonal, and staphylococcal coverage is not needed. Cefotaxime (2 g IV q8h) has been shown to achieve excellent ascitic fluid levels. The dosing interval may need to be reduced in patients with renal insufficiency.

This also had an influence on hospitalization days. On giving antibiotics empirically, 18 patients (25.71 %) were discharged within 8-10 days and 43 patients ( 61.43 % ) were discharged within 11-15 days. After giving antibiotics according to culture and sensitivity , 19 patients ( 63.33 % ) were discharged within 8-10 days. Thus, hospitalization days were reduced in patients in whom antibiotics were given according to culture and sensitivity as shown in Table 6.

Table 6 : Hospitalization ( days ) after giving antibiotics emperically and according to culture sensitivity.

Hospitalization / Antibiotics given	Emperically	Percentage	Culture sensitivity	Percentage
8-10	18	25.71	19	63.33
11-15	43	61.43	8	26.67
16-20	2	2.86	1	3.33
21-25	1	1.43	0	0
>25	2	2.86	1	3.33

## CONCLUSION

- 1 ) E.coli was the most commonest organism isolated from peritonitis due to duodenal ulcer perforation.
- 2 ) Maximum cultures were found sensitive to Piperacillin+Tazobactum and Cefotaxim.
- 3 ) Hospitalization and morbidity of patients was significantly reduced in patients treated with antibiotics according to culture and sensitivity.

## ACKNOWLEDGEMENT

We are thankful to Mrs. M.C. Deshingkar , Ms.Rupali salunke from Surgery Dept. Office for their secretarial help.

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How to cite this article: Punamiya AR, Chougule PG, Ahuja BR et. al. Commonest organisms and antibiotic sensitivity in peritonitis due to duodenal ulcer perforation in Krishna hospital, Karad. *Int J Health Sci Res.* 2014;4(8):93-97.

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