A PROSPECTIVE STUDY ON PERITONEALFLUID CULTURE AND ITS ANTIBIOTIC SENSITIVITY IN PERFORATIVE PERITONITIS PATIENTS

1. Abstract

Background: Perforative peritonitis remains a major surgical emergency with high morbidity and mortality. Antibiotic resistance is an emerging challenge.

Methods: A prospective study on 100 patients with hollow viscus perforation was conducted. Peritoneal fluid was collected intraoperatively and subjected to aerobic culture and antibiotic sensitivity using Kirby-Bauer disc diffusion.

Results: Duodenal perforations (52%) were most common, followed by gastric (42%) and ileal (G%). Klebsiella (4G%) and E. coli (34%) were predominant isolates. High sensitivity was noted with ceftriaxone and ciprofloxacin, while ampicillin and cotrimoxazole showed significant resistance.

Conclusion: Empirical antibiotic therapy should consider high resistance to older antibiotics. Culture-guided therapy improves outcomes in perforative peritonitis.

2. Introduction

Peritonitis is still among the most frequent issues that general surgeons deal with. It continues to

be a significant cause of morbidity and mortality regardless of whether it is a simple duodenal perforation, traumatic perforation, appendicular perforation, or a case of acute pancreatitis accompanied by a pancreatic abscess. The use of antibiotics and surgery in the treatment of peritonitis has only significantly improved in recent decades.

For the surgeon, an intra-abdominal infection is a huge obstacle. The peritonitis that frequently presents itself to us is secondary peritonitis brought on by a perforated hollow viscus. The doctors who are treating it are aware of the terrible and catastrophic complication; the issues might range from a simple wound infection to risky septic shock or SIRS (systemic inflammatory response syndrome).

Treatment for peritonitis faces a number of challenges, such as

•The age of patient

•Time interval of presentation

•General condition and nutritional status of patient

•Presence of any malignancy

The current approach to treating peritonitis focuses on addressing the underlying cause, controlling infection with systemic antibiotics, and facilitating supportive therapy to stop SIRS from developing.

When administering antibiotics, it was discovered that targeting aerobes resulted in lower mortality and more persistent abscess formation, whereas targeting anaerobes resulted in lower abscess formation and unchanged death. As a result, combination therapy was thought to be the best form of treatment.

A specific line of antibiotic medication, which typically includes a broad spectrum antibiotic that covers gram positive, gram negative, and anaerobes, can be started to treat the condition quickly. However, the current issue is the emergence of antibiotic resistance, which has a significant negative impact on treatment outcomes.

In order to start early and appropriate antibiotic therapy in our patients presenting with perforative peritonitis preoperatively, which can improve the patient's outcome, various organisms that are growing in the peritoneal fluid culture of the patients presenting with perforative peritonitis and their antibiotic sensitivity and resistance pattern in our institute were analysed in this study.

3. Methodology

DESIGN OF STUDY: COMPARITIVE STUDY

PLACE OF STUDY: ASRAM Medical College and Hospital

STUDY PERIOD: SEPTEMBER 2022- JUNE2024

STUDY POPULATION : Patients presenting to ASRAM medical college hospital with perforation peritonitis.
SAMPLE SIZE: 100

INCLUSION CRITERIA:

1. Patient presenting with Hollow viscus peritonitis to Emergency
2. Age more than18yrs

EXCLUSION CRITERIA:

1. Patient presenting with Peritonitis due to solid organ abscess

2. Patient below 18 years

4. Results

Table 1. Age & Sex Distribution

Age Group	Number of Patients
20–30 yrs	2G
31–40 yrs	3G
41–50 yrs	20
>50 yrs	18
Sex	Number
Male	88
Female	12

Table 3. Organisms Isolated

Organism	Frequency
Klebsiella	4G
E. coli	34
No Growth	14
Proteus	2
Pseudomonas	2
Mixed (E. coli + Klebsiella)	2

Table 4. Antibiotic Sensitivity

Organism	Ceftriax-one	[illegible]			
E. coli	87.5%	81.3%	81.3%	25%	12.5%
Klebsiella	U1.1%	73.U%	78.2%	8.G%	17.3%

5. Discussion

It is typical for hollow viscus perforations to result in secondary peritonitis. Due to patients' delayed hospital presentations, it has a high death rate.

In our study, the prevalence of secondary peritonitis caused by perforation was 7:1 higher in males than in females. Furthermore, our study's ratio is marginally greater than that of other well accepted publications. Males are more likely than females to experience perforations, which is most likely caused by their erratic eating patterns, drinking, and smoking. The age range of 3–40 years old accounted for the majority of perforation instances in our study, with 20–30 years old coming in second. The presentation's mean age is 35.2G years old.

The majority of patients have a history of peptic ulcer illness. The patient's medical history confirms that there has been no long-term exposure to medications such as steroids and NSAIDs. When a patient is admitted to the hospital, most of them do so after two to three days of symptoms, or about 50% of instances. after those who have perforation peritonitis, only 11% come to see us within a day after symptom onset. The average presentation lasts for almost 2.G hours.

This study indicates that the cephalosporin drug class, which is followed by the quinolone and amikacin groups of pharmaceuticals, is the most sensitive

in the majority of cases with perforated peritonitis.

The majority of the patients exhibited resistance to the cotrimoxazole group of medicines and ampicillin.

C. Conclusion

This study concludes that the duodenum and stomach have the highest rates of perforation, respectively. Peptic ulcer illness was the cause of the majority of cases.
In these patients, Klebsiella was the most common cause of secondary peritonitis, followed by Escherichia coli, and very infrequently, mixed, proteus, and pseudomonas.
Escherichia coli and Klebsiella were both susceptible to the cephalosporin medication class, which was followed by quinolones and macrolide antibiotics.

7. References

1. MAINGOT'S abdominal surgery,10thedition,pgno:C33-C50
2. SABISTON text book of surgery,21stedition,pgn:1088-1114
3. SCHWARTZ'S principle of surgery, 10th edition, pg no: 1035- 10UU
4. T.S.RANGANATHAN textbookofanatomy,Cthedition,pgno: 273-281
5. BAVEJA, textbook of microbiology,3rdedition,pgno:312-340
G. TRIPATHI, textbook of pharmacology, 5th edition, pg no: C27- CU7
7. SRB, manual of surgery,4thedition,pgno:5UU-C148. Non traumatic terminal ileal perforation, Dr. Rauf, et al, World journal of emergency surgery
U. Metronidazole is still the drug of choice for treatment of anerobic infection, Dr. Sonja, et al, Sweden
10. Shesh kumar et al, Internation Journal of scientific Research FEB 2021, An Epidemiological study of perforation peritonitis in a Teritiary care hospital
11. Rainer Grotelüschen, Lena M. Heidelmann, Marc Lütgehetmann et al, OCT 2U 2020 , Antibiotic sensitivity in correlation to the origin of secondary peritonitis.
12. Lohith P et al. Int SurgJ. 2020 Apr;7(4):1251-1257 cross-sectional study of anatomical site of perforation peritonitis and their microbiological profile.
13. Yadav S, Suthar R, Meena R, Meena RS.Int Surg J 2020;7:2255-C0. A prospective study of effectiveness of Mannheim peritonitis index scoring system in predicting the morbidity and mortality in peritonitis due to hollow viscous perforation.
14. Praveen Kumar-M, Nusrat Shafiq , Pradeep Kumar, Ashish Gupta,Ther Adv Infectious Dis 201U, Vol. C: 1–U. Antimicrobial susceptibility patterns of organisms causing secondary abdominal infections in patients with perforated abdominal viscus.
15. Umapathi P et al, Journal of Evolution of Medical and Dental Sciences Sep 2018: Clinical study and management of peritonitis secondary to Hollow Viscous Perforation.
1C. Ravisankar J, Venkatesan VS. A study on peritoneal fluid cultureand its antibiotic

sensitivity inperforative peritonitis cases. ISOR-JDMS. 2017;1C(3):34-7

17. SRB,Mavila R, Kottarath MD, Naseer N, Thambi N,Mohan V.Clinico-pathological profile of abdominaltuberculosis and their treatment response in atertiary care centre. Int J Res Med Sci.201C;4(12):5120-4
18. P.A. Abinayavallaban, et al, A study on peritoneal fluid culture and its antibiotic sensitivity in perforative peritonitis patients in cmch Coimbatore medical college hospital, repository-tnmgrmu.ac.in, 201C.
1U. Peritoneal fluid culture and antibiotic treatment in patients with perforated appendicitis in pacific island, Dr. Alexia et al, Asian Journal of surgery 2015, 1-5
20. Whether culture positivity and perforation operation interval affects mortality in perforation peritonitis?, Dr. aslam, et al, Indian Journal of Basic and applied medical research, March 2015, volume 4
21. Aerobic bacterial causes of secondary peritonitis and their sensitivity pattern in non traumatic small bowel perforation, D. Mutiibwa et al, East cent Afr J Surg, july 2013
22. Appendectomy m paediatrics the value of peritonealfluidsmear and its bacteriological profile, Dr. Manal, et 1, Open journal of medical microbiology, 2012, 2.