IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 23, Issue 4 Ser. 2 (April. 2024), PP 57-58
www.iosrjournals.org

A Study Of The Culture Of Peritoneal Fluid And Its Antibacterial Sensitivity In Patients With Perforative Peritonitis.

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Date of Submission: 28-03-2024 Date of Acceptance: 08-04-2024

I. Introduction:

Peritonitis continues to be a prevalent issue encountered by general surgeons. In recent decades, notable advancements have been made in the management of peritonitis, encompassing advancements in antibiotic therapy and surgical interventions. The surgeons involved in the treatment are aware of the severe and potentially life-threatening complications associated with this condition (1). These complications can range from small wound infections to severe septic shock or systemic inflammatory response syndrome (SIRS). The treatment can be straightforwardly initiated by initiating a specific course of antibiotic therapy, typically with a wide-ranging antibiotic that targets gram-positive, gram-negative, and anaerobic bacteria (2). Nevertheless, the current issue lies in the emergence of antibiotic resistance, leading to elevated rates of treatment failure.

II. Aims And Objectives:

1. To examine the bacterial composition in peritoneal fluid through culturing.
2. To assess the antibiotic sensitivity and resistance patterns of routinely utilized antibiotics in cultured organisms.

III. Materials And Methods:

This is a cross-sectional study conducted from January 2023 to January 2024 at MNR medical college over 50 patients presenting with perforating peritonitis. The study included patients who exhibited characteristics consistent with perforation peritonitis, as confirmed by x-ray examination. Patients who were 18 years of age or older were included in the study, whereas those who presented with primary peritonitis or peritonitis resulting from trauma were excluded from the study.

IV. Results:

The mean age of presentation was 35.33 ∓ 3.5 years. Most patients belonged to the age group 30-40. 39 were men and 11 were females. Most patients had duration of symptoms from 3 days, followed by 2 days. Most cases presented on the 2nd or 3rd day of perforation. 29 cases had duodenal perforation where was 19 had gastric perforation and 2 had ileal perforation. Most common organism isolated was Klebsiella (43%), followed by Escherichia Coli (38%), Proteus (3%), Pseudomonas (3%), No growth (13%). E. coli is most sensitive to ceftriaxone (88%), followed by amikacin (9%) and ciprofloxacin. Klebsiella are most sensitive to ceftriaxone (79%), followed by ciprofloxacin (13%) and amikacin.

Sensitivity of antibiotics to the organisms:

	E.coli (21)	Klebsiella (23)
Ceftriaxone	18	17
Ciprofloxacin	2	4
Amikacin	1	2

V. Discussion:

Perforation peritonitis continues to be the prevailing surgical emergency encountered in tropical countries such as India, with a comparatively lower age distribution compared to the Western world (6-9). The findings of our study indicate that there was a longer duration (>48 hours) between the onset of symptoms and the hospital presentation. Furthermore, this duration was found to be correlated with higher levels of faecal contamination and the presence of frank peritonitis in the majority of cases (3). There is a higher prevalence of peritonitis resulting from proximal gastrointestinal perforations in emerging regions compared to distal gastrointestinal perforations, which are more commonly observed in Western regions (4). Most of the patients in our study had a history of peptic ulcer disease. There is no exposure to steroids and NSAIDS. Majority of the patients (around 50%) had reached the hospital within 72 hours. The field of connectology has made notable progress in reducing the prevalence of peritonitis, with a special focus on cases caused by gram-positive pathogens. Nevertheless, the prevalence of gram-negative peritonitis has remained consistent, thereby indicating its increasing significance. Furthermore, gram-negative peritonitis frequently exhibits greater severity and is linked to more unfavourable outcomes. Gram-negative peritonitis typically arises from either faecal matter or the movement of infectious organisms through the intestines. Episodes of peritonitis caused by the transmural migration of bacteria across the intestinal wall are typically linked to the presence of numerous gram-negative organisms and anaerobic organisms. Transmural migrations were found to be an improbable pathway for peritonitis in our patient population, as none of our cultures successfully identified numerous gram-negative and anaerobic organisms. According to a study conducted in India, it has been observed that around two-thirds of gram-negative organisms exhibit resistance to third generation cephalosporins (5). This resistance may be attributed to the unrestricted access of these antimicrobials without prescriptions, as well as the improper utilisation of antimicrobials by primary-care providers. The antimicrobial sensitivity profile of our investigation revealed a significant finding: all gram-negative bacteria exhibited sensitivity to quinolones, gentamicin, and third-generation cephalosporins.

VI. Conclusion:

Klebsiella followed by E. coli are the most common organisms isolated from peritoneal fluid in patients with peritonitis and they are majorly sensitive to ceftriaxone.