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INCIDENCE AND AETIOLOGY OF GASTROINTESTINAL PERFORATION: A HOSPITAL BASED PROSPECTIVE STUDY.

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Abstract

Original Research Article

Objectives: This study was to evaluate the incidence and various aetilogical factors in patients of gastrointestinal perforation.

Methods: A detail history clinical examinations and relevant investigations were performed to all cases of gastrointestinal perforation. A total of 50 patients of gastrointestinal perforation with age group 0 to 80 years were enrolled. Patients were included on the presenting signs and symptoms like pain, vomiting, distension, alteration of bowel habits, fever, h/o loss of appetite and weight, dyspnoea and duration of illness. Clinical examination was followed by haematological, biochemical and radiological investigations were performed to all cases of gastrointestinal perforation.

Results: Data was analysed by using SPSS version 26 software. All data was tabulated and percentages were calculated. One sample t test was applied. Mean and standard deviation were observed. P value was taken less than or equal to 0.05 for significant differences.

Conclusions: Gastrointestinal perforation was commonly seen in younger age group. Ileum was the most common site for gastrointestinal perforation. Enteric fever and drugs were the most common aetiological factors of gastrointestinal perforation. Hence, awareness, early recognition of symptoms and referral of patients to hospital is very important for prevention and management of gastrointestinal perforation.

Key words: gastrointestinal perforation, aetiological factors, age, sex

Introduction

Perforation of gastrointestinal tract is a frequently encountered surgical emergency in any hospital. The condition is deadly because of having a very high mortality rate. Loss of integrity of Gastro intestinal tract with consecutive leakage of the intestinal contents into the peritoneal cavity leads to Peritonitis, superimposed secondary bacterial infection further worsen the situation and causes septicaemia. Perforation peritionitis, if not attended immediately, risks the life of the patient because of its disasterous sequelae. The severity of bacterial contamination depends on several factors such as site of perforation, underlying intestinal pathology and the ability of local host defense mechanisms to localize the infection. These factors may significantly influence the decision making during the process of optimal management of patients with GIT perforation [1]. Despite advances in surgical techniques,

antimicrobial therapy and intensive care support, management of perforation continues to be highly challenging. In majority of cases, presentation to the hospital is delayed with well established peritonitis with purulent /faecal contamination and varying degree of septicaemia. Though the mortality rate has been reduced over years with better medical management, improved surgical techniques, still mortality rate covers between 10% and 36.5% Dickson & Cole (1964) recorded 56% mortality rate in 38 case study [1]. The severity of illness, prognosis, morbidity and mortality are directly related to the interval between perforation and resuscitation of patients along with surgical closure of defects. Spontaneous perforation of small intestine leading to fulminating peritonitis and other complications like peripheral circulatory failure, toxaemia, dehydration, aspiration pneumonia, renal failure etc determine the outcome[2]. Objectives of this present study was to

Table 1: Age Incidence

evaluate the incidence and various aetiological factors of gastrointestinal perforation.

Material and Methods

This present study was conducted in Department of Surgery, Guru Nanak Dev Hospital Amritsar during a period from July 2011 to July 2012. A total of 50 admitted patients of gastrointestinal perforation were enrolled in this study. Attendants/entire subjects signed an informed consent approved by institutional ethical committee of Guru Nanak Dev university was sought. A detail history clinical examinations and relevant investigations were performed to all cases of gastrointestinal perforation. Data was collected by using random sampling methods with irrespective of age and sex.

The following points were taken into consideration:

• Presenting signs and symptoms like pain, vomiting, distension, alteration of bowel habits, fever, h/o loss of appetite and weight, dyspnoea and duration of illness.

- Physical examination included general built, and appearance, presence of anaemia, dehydration, icterus, distension, liver dullness, guarding /rigidity, hepatosplenomegaly, free fluid in the abdomen.
- Findings on P/R examination and other abnormalities.

• A thorough clinical examination was followed by haematological, biochemical and radiological investigations.

Statistical Analysis

Data was analysed by using SPSS version 26 software. All data was tabulated and percentage were calculated. One sample t test was applied. Mean and standard deviation were observed. P value was taken less than or equal to 0.05 for significant differences.

Observations

We were studied on 50 patients admitted to surgical emergency of Guru Nanak Dev Hospital, Amritsar with the diagnosis of Intestinal perforation. Patients with age group 0 to 80 years were included. Majorities of patients were belonged in age group of 21-30 years. Mean± S.D of age of patients was 35.22±13.758. p value was less than 0.0005. Hence age of patients was extremely significant. In this study. Most of the cases was male. And male and female ratio was 9:1.

| Age (Years) | No. of patients | Percentage |
|----------------------|-----------------|--------------------|
| 0-10 | 1 | 1(2%) |
| 11 – 20 | 5 | 5(10%) |
| 21 – 30 | 15 | 15(30%) |
| 31 - 40 | 12 | 12(24%) |
| 41 – 50 | 11 | 11(22%) |
| 51 – 60 | 5 | 5(10%) |
| 61 – 70 | 0 | 0 |
| 71 - 80 | 1 | 1(2%) |
| Total | 50 | 50(100%) |
| Statistical analysis | 35.22±13.758 | t=18.102, p<0.0001 |





Figure 1: Sex Incidence

 Table 2: Site Incidence

| Site | No. of patients | Percentage of patients |
|----------|-----------------|------------------------|
| lleum | 24 | 48% |
| Gastric | 11 | 22% |
| Duodenum | 10 | 20% |
| Jejunum | 2 | 4% |
| Colon | 3 | 6% |
| Total | 50 | 100% |

The above table III shows ileum 24(48%) as the most common site of perforation overall, followed by gastric 11(22%) and duodenal perforation 20(40%).

Table 3: Etiological Factors of gastrointestinalperforation.

| Etiological factors | No. of patients | Percentage of patients |
|------------------------|--------------------|---------------------------|
| Enteric fever | 22 | 44% |
| Drugs | 19 | 38% |
| Traumatic | 6 | 12% |
| Tubercular | 3 | 6% |
| Total | 50 | 100% |

The above table shows enteric fever 22(44%) as the most common cause of perforation overall followed

by drug consumption/addictions 19(38%). The ileal perforation in this study was the most commonly caused by Enteric fever, in some cases by trauma 6(12%) and TB 3(6%).



Discussion

The problem of intestinal perforation is very frequently encountered in the emergency of any hospital. This abdominal emergency has a high degree of morbidity and mortality, which continues to be a matter of great concern to the surgeons, particularly in a tropical country like India. At the time of presentation general condition of the patient is usually very much deteriorated and his outlook is very grim, he is desperate, in great agony and demands emergency surgical management. The management is guite simple but meticulous and within the reach of trained surgeon, yet not successful very often, to save the life of patient, prognostically the disease has wide variation. The present study was undertaken to discuss and analyse the possible factors like aetiology, age, sex and site of perforation etc. A total of 50 cases of intestinal perforation were admitted in surgical wards of Guru Nanak Dev Hospital, Amritsar, India. All the cases were assessed and risk factors were evaluated for gastrointestinal perforation.

In this study mean age of patients with gastrointestinal perforation was 35.22 ± 13.758 years. Most of the patients with intestinal perforation 15(30%) were the age between 21 to 30 years. This study was similar with the study of Dickson and Cole (peak incidence was around 20 to 25 years) [1].

In this study, gastrointestinal perforation was occurred predominantly in males (45 male and 5 female) with M : F = 9 : 1. This study matches with the studies of Gupta S, et al 10.5:1 [3].

Lau & Leow (1997) [4] have indicated that perforation of peptic ulcers was clinically recognized by 1799 but first successful surgical management of gastric ulcer perforation was reported by Ludwig Hesner in Germany in 1892. In 1894, Henry Percy Dean from London was the first surgeon to report successful repair of perforated duodenal ulcer. Contrast to common causes of small bowel perforations in the developing countries, small bowel perforations are rare in oriental countries. apart from Enteric fever and non specific ulcers, the other reported cause of such perforations from these countries include Crohn's disease, Bechet's disease, radiation enteritis, adhesions, ischemic enteritis, SLE and very rarely intestinal TB. Free perforations are a rare complications of Crohn's disease and their incidence is reportedly highest from Japan, where it ranges from approximately 3% to 10%. These perforations are usually solitary and occur mainly in ileum. However, they can be multiple and can occur at any site in the small or large bowel.

Non-specific ileal perforations are closely followed by small bowel perforations occurring in intestinal tuberculosis, mostly these are seen usually proximal to the strictures in terminal ileum. Free tubercular perforations are rare. The diagnosis of perforated tubercular peritonitis is usually not one that is made pre-operatively because of the non -specific clinical features and absence of chest tuberculosis findings chest X ray. Even if present unless on histopathological and culture confirmation doesn't occur, the diagnosis is not confirmed. The recommended treatment after source control is multi drug anti-tubercular treatment.

Heikkenen (1974) [5] described about the possible mechanism with which radiotherapy causes intestinal perforation. According to them, impaired blood flow and inflammation are important in this respect. Huttunen et. al. (1977) [6] published a report of 24 patients with non-traumatic small bowel perforation. In their series, the most common cause of perforation was vascular strangulation related to post-operative adhesions and recognized that etiological factors like typhoid fever are lacking in their series.

Out of total 238 operated cases of terminal ileum, there were 68 deaths due to above said complications (Archampong, 1969) [7]. The mode of treatment depends largely on the aetiology of perforation. Making timely and correct aetiological diagnosis is vital and directly affects the morbidity and mortality rate. However, precise diagnosis is sometimes difficult pre operatively and so, exploratory laparotomy becomes necessary in all cases.

In this study the most common site of perforation overall was terminal ileum 24(48%), second most common site was stomach 11(22%), other sites were duodenum 10(20%), colon 3(6%) and jejunum 2(4%). This study was correlated with the study of Nitin Agarwal [8] (most common site of perforation was ileum followed by duodenum).

In this study, the most common etiological factor of gastrointestinal perforation was enteric fever 22(44%), the 2nd most common etiology was drug consumption /addiction leading to peptic perforations 19(38%). This study matches with the study of Khanna et al [9] (108 out of 204 cases were of typhoid etiology), but differs with several other previous studies (Jhobta et al, Vagholkar, Gupta et al, Sharma et al [10,11,12,13] in their studies peptic perforations were the most common etiology and typhoid perforations were 2nd most common aetiology).

This is in accordance with the study conducted in 1970 by Sepaha et al. [14] in which 60 cases of enteric perforation were analysed.

The trends of cause and site of perforation have changed, previously it was perforation of terminal ileum due to typhoid perforation which was most common. But now perforations of gastroduodenum, because of dietary habits, are the most common forms of peritonitis. (Sinmen HP, Heinzelmann M, Largiader F 1991) [15].

Butler et al [2] reviewed 15980 cases of typhoid fever in world's literature and reported an a overall 2.8% perforation rate. These usually arise on background of enteric fever, when the ulcerated peyer's patches in anti-mesentric border of terminal ileum perforate to give frank peritonitis. These typhoid ileal perforations have a high mortality rate, (upto 60%) Aggressive resuscitation, antibiotics and early surgery has reduced the mortality rate and the complications in the subset of small bowel perforations.

Conclusions

This present study concluded that gastrointestinal perforation was commonly seen in younger age group. Ileum was the most common site for gastrointestinal perforation. Enteric fever and drugs were the most common aetiological factors of gastrointestinal perforation. Hence, awareness, early recognition of symptoms and referral of patients to hospital is very important for prevention and management of gastrointestinal perforation.

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