

Analysis of Factors Involved in Perforative Peritonitis and Its Significance to Mortality and Morbidity

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Abstract: *One of the most common scenarios in emergency department of any hospital is patients presenting with acute abdominal pain often attributed to duodenal ulcer perforation. As this is the common condition with variable outcomes, a study into the factors involved in this condition was done to analyse the outcomes with reference to morbidity and mortality into consideration.*

Keywords: Perforative peritonitis, duodenal ulcer

1. Introduction

Perforative peritonitis is one of the most common causes of acute abdomen in all the age groups. Multiple factors confounding the profile of the condition often overlap and change the scenario by which management of condition varies from patient to patient.

A study was undertaken in Krishna Hospital, Karad involving patients who presented with symptoms of perforative peritonitis and their detailed study was done to look into the pathology in detail.

As there are multiple factors involved in pathogenesis of the disease a comparative approach was undertaken, which involved cause of the perforation, degree of peritonitis caused, organisms involved in pathogenesis of perforation, presentation of patients, initial resuscitative measures required, treatment protocols used and complications occurred after the intervention.

Out of 105 patients involved in the study, 3 had sealed perforation which did not require any intervention as such other than the hospitalization; others had to be managed operatively.

2. Methods

Ethical statement-

The study met the standards outlined in the Declaration of Helsinki and Good Epidemiological practices. This study did not change or modify the laboratory or clinical parameters which were present.

Study Population-

The cohort was set as any patient presenting in emergency room of Krishna Institute of Medical Sciences and Research Centre, Karad, between age group of 30-90 yrs, with symptoms of acute pain in abdomen with gas under diaphragm seen on either chest radiograph or xray erect abdomen.

Total 105 patients were included in the study.

Etiopathogenesis-

Perforation is breach in continuity in the walls of the organ. Commonly these occur in the stomach, duodenum, ileum and then in other parts of intestine. Perforations can be either traumatic or nontraumatic.

Traumatic perforations occur due to blunt injury to abdomen or penetrating injury to abdomen.

Nontraumatic perforations occur in prolonged peptic ulcer cases, carcinomas, tuberculosis, typhoid and other organic diseases. Colonic perforations are relatively rare but can occur in traumatic cases.

The perforation occurring due to infective cause usually involves peritonitis, perforation of lesser curvature of stomach involves localised peritonitis in lesser omentum while perforation of greater curvature or duodenum causes generalised peritonitis causing peritoneal signs.

The patient presents with pain in abdomen at first, rigid abdomen with guarding and tenderness all over the abdomen with varying vital parameters.

Management

All the patients presenting with symptoms and signs of perforative peritonitis and gas under diaphragm on erect abdomen xray were treated surgically with exploratory laparotomy and closure of perforation under general anaesthesia after all necessary investigations and primary correction of fluid deficit.

The management of perforation varies depending upon the site, size, number of perforations and also the viability of the adjacent bowel. Some required only closure of perforation with omentoplasty, some patients with unhealthy bowel wall or multiple perforations required

resection and anastomosis of the involved segment. 2 drains were kept to drain intraperitoneal collection, if any. Appendicular perforations were managed with appendectomy.

In post-operative period patients were kept nil by mouth for 5 days, with ryles tube aspiration and strict intake-output record. Drains were monitored 8 hourly to look for soakage and also smell. Proper antibiotic coverage with intravenous supplementation was given to the patients.

Operative wound was checked after 48 hours for any collection or discharge. Dressing (dry or wet) was kept according to condition of the wound. Patient was ambulated on third post-operative day.

Ryle's tube was removed after satisfactory bowel sounds were confirmed and patient passed flatus. Patient was started with liquids orally and gradually shifted to regular diet.

Sutures were removed on 8th post-operative day if no complications occurred. Tension sutures were removed two days after removal of main wound sutures.

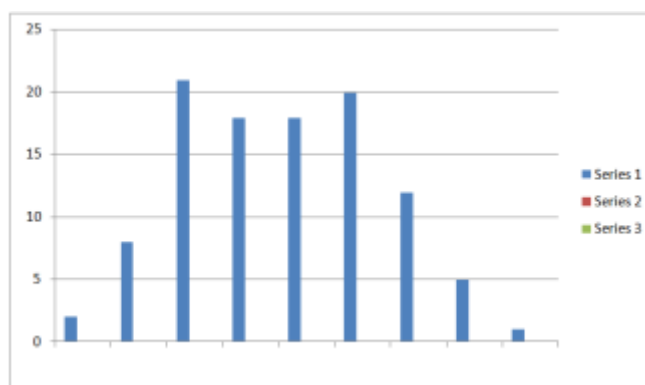
Post-operative Complications

Any complication occurring in the post-operative period like thrombophlebitis, pyrexia, wound infection, pulmonary complications, wound discharge or dehiscence, burst abdomen, deep vein thrombosis, anastomotic leak were managed accordingly.

3. Results

1. Age incidence of Perforative Peritonitis-

No	Age Group	Cases	Percentage
1	0-10	2	1.90%
2	11-20	8	7.6%
3	21-30	21	20%
4	31-40	18	17.15%
5	41-50	18	17.15%
6	51-60	20	19%
7	61-70	12	11.43%
8	71-80	5	4.76%
9	81-90	1	0.95%



2. Age incidence in relation to etiology

Age group	Total	%	Peptic	Enteric	Appendix	Jejunal	Malignant	Meckels	Total	%
0-10	0	-	0	0	2	0	0	0	2	2.32
11-20	3	15.78	4	1	0	0	0	0	5	5.82
21-30	8	42.1	7	3	3	0	0	0	13	15.12
31-40	1	5.28	14	2	1	0	0	0	17	19.76
41-50	3	15.78	13	1	0	1	0	0	15	17.45
51-60	1	5.28	19	0	0	0	0	0	19	22.09
61-70	3	15.78	6	2	0	0	0	1	9	10.46
71-80	0	-	2	1	0	1	1	0	5	5.82
81-90	0	-	1	0	0	0	0	0	1	1.16

3. Sex incidence in relation to etiology-

Etiology	Male	Female	Total	Ratio
Traumatic	16	3	19	5.3:1
NonTraumatic	67	19	86	3.5:1
a) Peptic	50	16	66	3.1:1
b) Enteric	9	1	10	9:1
c) Appendix	5	1	6	5:1
d) Jejunum	1	1	2	1:1
e) Malignant	1	0	1	-
f) Meckel's	1	0	1	-

4. Past history in relation to Peptic perforations-

No	Past history	Cases	Percentage
1	Acid-peptic disease	41	62.12
2	Drug history	12	18.18
3	Previous surgery	3	4.54
4	Spicy food	30	45.45

5. Modalities of treatment offered-

Modality	Simple closure	Resection- anastomosis
Stomach	7	-
Duodenum	3	-
Jejunum	3	2
Ileum	16	3
Colon	1	2
Malignant	1	-
Meckel's	-	1
Total	91.91%	8.09%

6. Post-operative complications-

Complications	Cases	Percentage
Wound infection	29	27.61
Thrombophlebitis	12	11.42
Bronchopneumonia	6	5.71
Atelectasis	5	4.76
Pulmonary oedema	7	6.66
Aspiration Pneumonia	1	0.95
Burst abdomen	3	2.85
Anastomotic leak	3	2.85
Intra-peritoneal abscess	3	2.85

7. Mortality and cause of death-

Traumatic				Non-Traumatic			
Organ	Cases died	Cause of death	%	Organ	Cases died	Cause of death	%
Stomach	0	-		Peptic	6	Shock	9.09
Duodenum	0	-		Enteric	1	Septicemia	10
Jejunum	0	-		Appendix	0	-	-
Ileum	3	Septicemia	33.33	Jejunum	1	Septicemia	50
Colon	0	-		Malignant/Meckel's	0	-	-

4. Discussion

Correct diagnosis and appropriate treatment forms the cornerstone of the acute abdomen in perforative peritonitis. Cases of perforative peritonitis carry a high mortality which can be reduced by early diagnosis, adequate

preoperative resuscitation, proper surgical technique and post-operative supportive care.

Pain in abdomen is the most common and relevant finding in all these patients associated with vomiting, distension of abdomen and fever. Other relevant signs include

tachycardia, hypotension, rigidity and obliteration of liver dullness. Positive Radiological evidence of pneumoperitoneum is also the key factor in initiating the treatment and any delay in radiological investigation or positive finding of pneumoperitoneum led to development of complications. Also absence of pneumoperitoneum on radiological investigations does not rule out the possibility of perforative peritonitis.

Factors contributing to mortality and morbidity-

- Age and sex
- Etiology of peritonitis
- Time interval between perforation and hospital admission
- Hemodynamic condition at the time of hospital admission
- Time interval between hospital admission and surgical intervention
- Complications related to surgery and anaesthesia
- Site, size and etiology of perforation
- Operative time
- Comorbidities
- Post-operative complications

5. Conclusion

Gastro-intestinal perforations are the commonest emergencies encountered. The commonest age group affected is between 51-60 years. It is found to be more common in males than females. The commonest cause of perforative peritonitis is peptic perforations followed by traumatic gastrointestinal, enteric, appendicular. All the patients had one symptom in common-pain with other more variable symptoms including vomiting, distension of abdomen and fever.

The more common association of peptic perforations is due to tobacco addiction, alcoholism, haphazard consumption of NSAIDs, steroids, noncompliance and ignorance by the patients. Violence and trauma are the next common etiological factors.

The commonest signs in patients with perforative peritonitis are, tachycardia, shock, hypotension, dehydration, tenderness and board like rigidity, obliteration of normal liver dullness.

Prognosis of the disease depends on the duration of occurrence of the symptoms and proper therapeutic intervention. Longer the duration, poorer the prognosis.

Surgical treatment at the earliest and simple closure of the perforation remains the best modality of the treatment.

Mean duration of hospital stay is 12 days with mean duration of regular follow up 6.30 months in OPD.

The prognosis was found to be best in traumatic perforations mainly because of early hospital aid and early treatment due to obvious diagnosis. The prognosis, morbidity and mortality all worsen with poor general

condition, advanced age, co-morbidities, hypotension and early septicemia at presentation, delay in diagnosis and surgery.

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