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Spectrum of Diseases in Patients with Non-Traumatic Acute Abdominal Pain Presenting to General Surgery Department in a Rural Tertiary Care Centre in West Bengal

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Abstract: ***Background:*** *Acute non-traumatic abdominal pain is one of the most common presenting symptoms in emergency of a general surgery department. The aetiology is varied for a common symptom and so it is very important to come to an early diagnosis for proper management.* ***Objective****: To identify the spectrum of diseases leading to acute onset non-traumatic abdominal pain, presented in the general surgery department.* ***Design:*** *Institution based prospective observational study.* ***Setting****: Department of General Surgery, B.S. Medical College, Bankura.* ***Duration****: January 2015 to December 2015.* ***Materials and methods****: All patients more than 12 years of age presented with non-traumatic abdominal pain in the general surgery department from January 2015 to December 2015 were included in this study. The demographics, diagnosis and outcome were noted in a predesigned, pretested proforma and analyzed.* ***Results****: The study cohort included total 3538 patients out of which 54.35% were male. Majority (54.74%) of the patients were in 25-50 years of age group consisting of 26.59% male and 28.15% female. Patients who came for treatment were mostly from lower class of socio-economic group (59.97%) according to SEC by Government of India. 56.21% patients presented with pain for >72 hours duration. The most common site affected being lower abdomen (46.72%), followed by upper abdomen (36-43%) and periumbilical (12.37%). 4.46% patients presented with generalized abdominal pain. Pain was sudden in onset in 67.21% patients (2378/3538) and 54.97% patients were having 5-7 scale pain at presentation according to Numeric rating scale of pain. Most common cause was found to be acute appendicitis (16.3%) followed by acute pancreatitis (11.92%), acute cholecystitis (9.60%) and renal colic (7.49 %). 74.61% (2640/3538) patients were managed conservatively and surgical intervention was needed in 25.38% patients. In hospital mortality rate was 1.72%. Conclusion: The most common cause of non traumatic acute abdominal pain in this study was acute appendicitis affecting young and middle aged population, followed by acute pancreatitis and acute cholecystitis.*

Keywords: Emergency, Nontraumatic, Pain Abdomen, Tertiary Care Hospital

1. Introduction

Acute abdominal pain is one of the most common presenting complaints at emergency of general surgery department and due to its varied aetiology it poses significant diagnostic challenges for emergency surgeons [1]. At presentation, it is usually of sudden onset and associated with features like nausea, anorexia, vomiting, tachycardia etc. The aetiology and presentation also varies according to demographic patterns, age distributions and local availability of health care facilities [2]. In this study, conducted in a high volume tertiary care centre in rural west Bengal, we aimed to study the demography, clinical profile, disease spectrum and outcome of non-traumatic acute abdominal pain in adult patients.

2. Materials and Methods

The proposed institutional based prospective observational study was conducted in the general surgery department of B.S. Medical College, Bankura, India from January 2015 to December 2015. All patients aged more than 12 years admitted with acute onset non-traumatic abdominal pain in general surgery ward were included in study. Patients having traumatic abdominal pain were excluded from the study. Written informed consent was obtained from all patients and their guardians where applicable. The study was approved by the institutional ethics committee.

Detailed information including demographic data, history and physical examination were collected in a predesigned data collection format. The Numeric Pain Rating Scale was used to assess the severity of pain. In the Numeric Pain Rating Scale, the patient has to rate his/her pain on a scale of 0(no pain) to 10(worst pain imaginable). Routine blood investigations and radiological investigations like ultrasonography, x-ray, CT scan and MRI were done when indicated. For pain relief medications were given orally for mild pain and for severe pain, parenterally. The patients were followed up until discharge and the final diagnosis were noted.

3. Statistical Methods

Statistical analysis was performed using IBM SPSS Statistics software, 2015 version.

4. Results

Total 3538 people were included in the study. There was a slight male prominence (54.35%). Total 1937 patients, 54.74% of total population were from 25-50 years age group and 16.3% patients were >50 years of age of whom only 180 patients were female (5.08% of total study population). Most of the patients (59.97%) were from lower socio-economic group, (category D, E_1, E_2 according to SEC of Govt. Of India)[3]. 27.75% patients were having pain for less than 24 hours. Majority (56.21%) were having pain for >3 days. About 60% patients (2124/3538) came to the tertiary care centre first after having symptoms. Co-morbid conditions like hypertension, diabetes, ischemic heart disease were

present in 26.9%, 11.36%, 2.03% patients respectively. 1.3% patients had previous history of abdominal surgery. Most common addiction was tobacco chewing (1722/3538) followed by smoking and pan. Smoking was more prevalent among male population (84.65%) [Table 1]

37.98% patients were having pain ranging from 1-3 (mild), 54.97% were having pain ranging from 4-6(moderate) and 7.03% patients were having severe (7-10) pain according to The Numeric Pain Rating Scale. The pain was sudden in onset in 67.21% patients. Lower abdominal pain was the most common site of pain (46.72%), followed by upper abdomen (36.43%) and periumbilical (12.37%). 4.46% were having generalized pain abdomen. The pain radiation was 31.68% for groin, 12.04% for back and 7.37% was towards shoulder. Majority (44.17%) didn't have any kind of pain radiation while 4.72% patients were unable to appreciate the radiation of pain. 25.49% patients were having dull aching boring pain where 23.65% patients were having colicky pain. Nearly 21% (20.97%) patients couldn't express their pain character. The most common associated factor was anorexia (75.69%) followed by nausea (64.38%), vomiting (42.17%), constipation (27.19%), abdominal distension (22.13%), obstipation (20.63%) and urinary symptoms (16.84%). [Table 2]

In our study, most patients (74.61%) were managed conservatively. Majority (36%) of the patients had a hospital stay of 4-7 days where 31.88% were discharged within 1-3 days. Longer duration (>7 days) of hospital stay were observed in 15.82% (560/3538) cases. The majority (92.02%) of the patients were discharged from hospital after successful completion of their treatment. 5% patients were discharged on request/left against medical advice. Hospital mortality rate was 1.72%. [Table 4]

In our study the final diagnosis of acute onset non-traumatic pain abdomen at discharge were of varying aetiology. Acute appendicitis (16.30%) is the most common cause of acute onset pain abdomen in our study, more commonly in females (332/577 cases) followed by acute pancreatitis (11.92%) and acute cholecystitis (9.60%). Gastro-surgical cases (34.03%) were the commonest presenting cases whereas genitor-urinary (23.91%) and gynaecological (7.6%) pathologies were also presented in general surgical ward with complaints of pain abdomen. 3 cases of acute mesenteric ischemia and 1 case of abdominal aortic aneurysm were also presented as acute onset non-traumatic pain abdomen. The exact pathology associated with pain abdomen couldn't be determined in 76/3538 (2.2%) cases.

5. Discussion

Acute abdominal pain is the most common presenting symptoms in general surgery emergency and contributes to the largest number of patients (non-traumatic) getting admitted in general surgery ward [4]. Aetiology, presentation and differential diagnosis of non-traumatic acute pain is varied and depends on age, sex, social custom and practice and genetic factors. This study is designed to assess and highlight the spectrum of acute abdominal pain in local rural, low socio-economic status population.

Out of 3538 patients, 54.35% were male, with highest (54.74%) incidence belonging to 25-50 years, which is in contrast to previous studies where 45-60 years were the most affected age group [5]. Male predominance is comparable to similar studies done previously. Significant absence of female patients in >50 years age group have been observed (5.08% of total study population).

Being situated in a peripheral town of west Bengal, our tertiary care centre have encountered majority of patients from lower socio-economic group according to SEC (category D, E1, E2) [3].

More than half (54.97%) of the patients presented with moderate pain (4-6 on Numeric pain rating scale); The numeric pain rating scale is well validated in our population according to the study conducted by Mudgalkar *et al.*[6] in Indian population. 67.2% population reported the pain onset as sudden while it was gradual in the rest of them.

Though 60.03% patients visited tertiary care centre for their complaints majority of them were suffering from pain for >3 days without visiting a primary or secondary health care centre. Most common localisation was around lower abdomen (46.72%) with 44% having no radiation of pain. 31.6% had pain radiating towards groin. Though a large number of associated symptoms were recorded but their value in establishing a final diagnosis couldn't be corroborated, as suggested by various medical literatures.

Studies conducted by Institute of Surgery of the University of Rome found acute appendicitis as the most common cause of acute abdominal pain presenting in surgical emergency [7]. Study by Tariq *et al.* from Pakistan also concluded that acute appendicitis is the most common pathology associated with acute abdominal pain [8]. In our study 16.30% patients (577/3538) presented with acute appendicitis followed by acute pancreatitis (11.92%), acute cholecystitis (9.6%) and acid peptic disorder (6.89%). The large number of cases of acute pancreatitis can be explained by the easy availability of alcohol and decreased social taboo among low income group population. The increased incidence of acid peptic disorder is also due to local food habit of taking deep fried spicy food, remaining on empty stomach while earning daily wages and irregularity of food intake.

33.23% patients having pain abdomen were found to be due to general surgical causes while 23.9% patients had urinary tract pathology behind their acute onset abdominal pain. Total 272 patients (7.6%) admitted with pain abdomen were later found to be having gynaecological pathology.

In 78 patients (2.2%) in our study, no final diagnosis could be established. It can be associated with the fact that various other conditions like irritable bowel syndrome, pelvic inflammatory disease, torsion of adnexa, viral

diseases like dengue can mimic acute onset pain abdomen and in those cases the cause of abdominal pain a search for cause may not prove fruitful always[9].

In our study, 25.38% patients needed surgery which is somehow less than a study conducted by Irvin on 1190 patients where 47% cases needed operative intervention [10]. This may be associated with the fact that 60.03% patients first came to a tertiary care institute for admission with their symptoms, without attending a primary or secondary care centre. The mortality rate was 1.72% and it is comparable to other national and international studies [11].

6. Conclusion

Acute appendicitis is the most common cause of non-traumatic abdominal pain followed by acute pancreatitis and acid peptic disorder. It has been in concordance with other studies but few points are to be given more importance. The easy availability of alcohol with decreased social taboo of alcoholism due to any reason and local food habit of taking deep fried food at breakfast with taking only two meals particularly in the presenting poor population are perhaps the most important contributors of acute pancreatitis and acid peptic disorders. Though more socio-economic studies are required to establish the above mentioned facts, it would not be unjustified to say that increased public awareness along with involvement of general administration to improve the quality of life of these poor people will lead to decreased incidence of acute pancreatitis and acid peptic disorder which will ultimately reduce morbidity and mortality and saving of public money.

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Table 1: Patients demography and presentation

Characteristics	*Number (N=3538)*			*Percentage (%)*	
Males	1923			54.35	
Females	1615			46.56	
Age group (in years)	**TOTAL**	MALE	FEMALE	MALE	FEMALE
• 12-25	1024	592	432	16.73	12.21
• 25-50	1937	941	996	26.59	28.15
• >50	577	397	**180**	11.22	5.08
Economic status (SEC classification)					
• Upper (A_1,A_2,B_1)		443		12.5	
• Middle (B_2,C)		973		27.5	
• Lower (D, E_1,E_2)		2122		59.97	
Presentation:					
• Tertiary care first:		**2124**		60.03%	
• Treated/Referred from primary or secondary centre:		1414		39.96%	
Co-morbidities:					
• Hypertension:	952	702	250	36.5	15.47
• Diabetes:	402	289	113	15.02	6.99
• Ischemic heart disease:	72	58	14	3.01	0.86
• Previous surgery:	46	30	16	1.56	0.99
Addiction:					
• Smoking	1702	1628	74	84.65	4.5

• Alcohol	1508	1478	30	76.85	1.85
• Pan	1609	734	875	38.16	54.17
• Tobacco chewing	**1722**	1174	548	61.05	33.93
• IV drug	57	53	4	2.75	0.24

Table 2: Severity and Characteristics of pain

	Number (n=3538)	*Percentage (%)*
Severity according to The Numeric rating scale of pain:		
• 1-3 (mild)	1344	37.98
• 4-6 (moderate)	1945	54.97
• 7-10 (severe)	249	7.03
Onset		
• Sudden	2378	67.21
• Gradual	1160	32.78
Duration of pain (in days)		
• <1	982	27.75
• 1-3	567	16.02
• >3	1989	56.21
Localization of pain:		
• Lower abdomen	1653	46.72
• Upper abdomen	1289	36.43
• Periumbilical	438	12.37
• Generalized	158	4.46
Radiation:		
• None:	1563	44.17
• Groin:	1121	31.68
• Back:	426	12.04
• Shoulder:	261	7.37
• Unable to express:	167	4.72
Character of pain:		
• Colicky	837	23.65
• Dull/Boring	902	25.49
• Cramping	419	11.84
• Burning	638	18.03
• Vague/Can't describe	742	20.97
Associated symptoms:		
• Anorexia	2678	75.69
• Nausea	2278	64.38
• Vomiting	1492	42.17
• Constipation	962	27.19
• Abdominal distension	783	22.13
• Obstipation	730	20.63
• Urinary symptoms	596	16.84
• Diarrhoea	406	11.36
• Fever	153	4.32
• Bleeding P/R	78	2.2
• Jaundice	73	2.06
• Bleeding P/V	43	1.2
• Haematuria	16	0.45

Table 3: Final diagnosis at discharge

	Number (n=3538)			*Percentage*
General surgical		MALE	FEMALE	
• Acute appendicitis	577	245	332	16.30
• Acute cholecystitis	340	132	208	9.60
• Acute intestinal obstruction	145	65	80	4.09
• Hollow viscus perforation	107	78	29	3.02
• Testicular torsion	7	7	-	0.19
Gastro-intestinal				
• Acute pancreatitis	422	267	155	11.92
• Acid peptic disorder	244	187	57	6.89
• Mesenteric lymphadenopathy	134	70	64	3.78
• Colitis	119	77	42	3.36
• Ca Gallbladder	69	33	36	1.95
• Ca Stomach	42	28	14	1.18
• Ca Pancreas	38	30	8	1.07
• Acute gastroenteritis	30	16	14	0.84
• Liver abscess	28	23	5	0.79
• Ca rectum	20	14	6	0.56
• Hydatid Cyst of liver	16	12	4	0.45
Urinary tract				
• Renal colic	265	186	79	7.49
• UTI	261	152	109	7.37
• Acute retention of urine	148	99	49	4.18
• Epididymo-orchitis	106	106	-	2.99
• Pyeloneprhitis	66	52	14	1.86
Gynaecologic and obstetrical				
• Dysmenorrhoea	124	-	124	3.5
• Adnexal mass	89	-	89	2.51
• Ectopic pregnancy	59	-	59	1.66
Vascular				
• Acute mesenteric ischemia	3	3	-	0.08
• Abdominal aortic aneurysm	1	1	-	0.02
Non specific pain abdomen	78	40	38	2.2

Table 4: Final outcome

	Number (n=3538)	*Percentage*
Management:		
• Conservative	2640	74.61
• Surgery	898	25.38
Duration of hospital stay (in days)		
• <1	576	16.28
• 1-3	1128	31.88
• 4-7	1274	36.00
• >7	560	15.82
In hospital discharge status:		
• Alive	3256	92.02
• DORB/LAMA	178	5.03
• Referred to higher centre	78	2.20
• Death	61	1.72