

Incidence of Acute Pancreatitis Among Paediatric Patients

Acute
Pancreatitis in
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ABSTRACT

Objective: The objective of my study is to know the etiology, clinical course, incidence of acute pancreatitis (AP) among paediatric patients admitted in paediatric surgery department.

Study Design: Retrospective descriptive study

Place and Duration of Study: This study was conducted at the Department of Pediatric and Neonatal Surgery Bahawal Victoria Hospital Bahawalpur, from March 2017 to March 2022.

Materials and Methods: During the study period a total 77 patients of acute pancreatitis under 13 year of age who were managed in the department of pediatric and neonatal surgery were included in study. All those patients who fit on the definition of AP (Acute pancreatitis is a disease characterised by minimum two of the following three 1. sudden onset of pain central abdomen 2. Increased level of pancreatic enzymes that is serum amylase or serum lipase 3. radiological evidence of pancreatic changes) were included in the study. Pancreatic enzymes were done in each patient and USG and CT / MRI done as required.

Results: Out of 77 patients studied, forty-three (56%) were male and 34 (44%) female. Pain abdomen (100%), nausea/ vomiting (81%) were the most commonly observed symptoms and signs. Among the aetiologies, we found blunt abdominal trauma 31%, choledochal cyst/biliary channel anomaly 19%, biliary tract stones/sludge 13% and idiopathic (37%). acute pancreatitis were more frequently associated with complications (60%) which included pseudo cyst of pancreas (34%), peri pancreatic abscess (4%) and ascities (13%). Serum amylase and lipase done were 4 to 5 times raised in all patients. Imaging plays an important role in diagnosis, so USG Abdomen done in all patients and CT / MRI as needed. most of these patients were managed conservatively.

Conclusion: The number of pediatric acute pancreatitis is increasing among the hospitalised patients. The Children having abdominal pain and vomiting must be thought for and investigated for the acute pancreatitis. Most of the patients with acute pancreatitis can be managed conservatively Except those with congenital anatomical defects.

Key Words: Pancreatitis, pain abdomen, pancreatic abscess,

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INTRODUCTION

Over the last many years, acute pancreatitis has been increasingly diagnosed in the pediatric surgical department but its etiology is not certain^[1-7]. It may be that obesity is increasing among children leading to biliary tract disease⁷. Another hypothesis regarding the etiology of high pediatric pancreatitis diagnosis may be increased knowledge of pancreatitis among physicians and ease in access to investigations (lipase, amylase)^{1, 3, 7}.

Acute onset of abdominal pain with raised amylase/lipase level in the urine and/or blood are the

characteristic of Acute pancreatitis (AP) which is an inflammatory disease, also there are radiological changes in the pancreatic parenchyma. Though AP isn't common in pediatric age, but morbidity/mortality associated with it is more concerned in pediatric patients presenting with sudden onset of abdominal pain in the casualty department⁸. The pancreatic enzymatic flow which is started by the trypsin converted from trypsinogen results in Pancreatic and peripancreatic inflammatory changes⁹. pathologically AP presents in two forms : A, pancreatic oedema, which is milder disease and good prognosis. B, necrosis of the pancreas and peripancreatic tissues, which has a rather bad outcome, but it's less common in pediatric age (<1%).¹⁰ About 1/3 patients of AP represent with complications and thus in the presence of such complications the morbidity and mortality rate is raised.^{11,12}

The causes, clinical course, and management of pancreatitis vary among paediatric patients and adult patients. However, until now to diagnose the Acute Pancreatitis in pediatric population under 18 years of age the Atlanta modified guidelines were used^[9,10]. A group of experts published guidelines in 2012, whose aim was to define pediatric AP, pediatric acute recurrent pancreatitis, and pediatric chronic

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pancreatitis, this group is called The INSPPIRE (International Study Group of Paediatric Pancreatitis: In search of a cure),¹³. From the INSPPIRE point of view, to diagnose AP at least two out of the three criteria are present: 1. pain abdomen, that suggests pancreatitis (sudden onset of pain central abdomen), nausea and vomiting, and back pain; 2. blood amylase and/or lipase level increase at least three times more than the upper limit of normal values,³. imaging findings characteristic for AP. Although AP is rare in children, but it is one of the major etiologies of mortality and morbidity in patients presenting with sudden pain abdomen in casualty department¹¹. the complications due to pancreatitis may be seen in about 1/3 of patients but in the presence of complications the rate of mortality and morbidity is increased.¹² AP should be put among the differential diagnosis and appropriate management started early in patients coming with acute pain abdomen to minimize complications.¹⁰

MATERIALS AND METHODS

After taking approval from institutional ethical review committee, we conducted this study at department of pediatric and neonatal surgery. The aim of this study was to analyze the clinical features, causes, outcome and an increase in number of patients of AP among admitted pediatric patients in our center. Medical records of the patients with AP since March 2017 to March 2022 were analyzed from hospital records. Inclusion criteria was patients under 13 years of age with a diagnosis of AP (sudden pain central abdomen, nausea and vomiting, Laboratory investigations serum amylase/ lipase at least 3 times normal range and/or imaging findings favouring AP)¹. Patients admitted for another disease with a past history of AP were excluded from the study. Variables, laboratory investigations (serum amylase and lipase) obtained within first 24 hr of the start of symptoms/signs were considered for inclusion in study. The imaging studies of each case were reviewed: pancreatic edema, peripancreatic inflammation, pancreatic/peripancreatic necrosis, collections, abscess, haemorrhage, and pseudo cyst. Findings, like abnormal anatomy of the pancreatic biliary system or any other abdominal abnormalities were also noted. Mean and standard deviation (SD) or median, were used for quantitative variables. Absolute and relative frequencies for nominal variables. In addition, the descriptive analysis of each variable was done independently for AP, and their results were compared using the chi-squared test for categorical variables, and Student's *t*-test for quantitative variables. P value of 0.05 was considered as significant.

RESULTS

During the study period, 2017 to 2022, there were 77 visits to the pediatric surgery department for children

under 13 years of age with a final diagnosis of pancreatitis. Among the 77 visits, first episode of AP was found in 60 patients, and 17 patients visited for the recurrent attack of pancreatitis. Eight (8) years was the median age for AP. from the first acute attack to the first recurrent attack the median time was 6.3 months. As shown in table 1, patients with AP 46 (59%) were male and 31(41%) were female. Serum amylase and lipase done were 4 to 5 times raised in all patients. Thirty eight (49%) patients were between 7to 13 yrs of age, 23(30%) of patients between 4 to 7 yr, 16(21%) were 2 to 4 yrs of age (table 2). Among the aetiologies, we found blunt abdominal trauma 31%, choledochal cyst/biliary channel anomaly 19%, biliary tract stones/sludge 13% and idiopathic (37%) table 3. Among the trauma motor cycle/bicycle handle bar injury was the commonest followed by fall from height, road traffic accident, fall of brick wall over abdomen. Imaging plays an important role in diagnosis, so USG Abdomen done in all patients and CT / MRI as needed. most of these patients 72(93%)were managed conservatively and 5(7%) patients underwent surgical intervention (table 4). Out of 77 only 5 patients developed complications which include pancreatic abscess, 4 were managed successfully, one patient expired due to sepsis $p < 0.01$.

17 patients were diagnosed as acute recurrent pancreatitis (ARP) and among them 9 (57%) were male and 8 patients (43%) were female. Etiologically idiopathic 45%, blunt abdominal trauma 27%, choledochal cyst/biliary tract abnormality 17%, biliary channel stones/sludge 11%.

Table No.1: %age of patients according to gender (n=77)

Gender	No. of patients	%age
Male	46	59
Female	31	41
Total	77	100

Table No.2: %age of patients according to Agedistribution (n=77)

Age (yr)	No. of patients	%age
2 – 4	16	21
>4 – 7	23	30
>7 – 13	38	49
Total	77	100

Mean \pm SD = 27.53 \pm 31.12 months

Table No.3: %age of patients according to etiology n.77

Etiology	No. of patients	%age
Blunt abdominal trauma	24	31
Idiopathic	28	37
Biliary tract stone/sludge	10	13
Anatomical anomalies of pancreatic biliary system	15	19

Table No. 4: Outcome of patients (n.77)

Conservative management	72	
Surgical intervention	5	
Total	77	100%

P value; < 0.01%

DISCUSSION

This retrospective study shows that children suffering from AP may have different types of etiologies which include, trauma (31%) and cholelithiasis/biliary tract stone, sludge 13%; anatomical anomalies of pancreaticobiliary system 19% but in approximately 37% of the patients' etiological factor could not be identified (idiopathic 37%). Trauma (21%) and biliary tract diseases (10%) were the main etiologies of pediatric AP in a study conducted by Poddar et al. from Austria, among 329 children having AP, RAP and CP¹³. C Fayyaz et al. reported choledochal cyst, biliary tract stones/sludge 15%, idiopathic 40% and trauma 6% among 72 pediatric patients with AP from Pakistan¹⁴. Elif sag et al. from turkey reported 63 children with AP and main etiologies were 25% idiopathic, trauma (11.1%) and gall bladder stone (9.5%) and systemic diseases (14.3%)⁸. Park et al in his study conducted at USA, reported pancreatic biliary etiology (36.2%), certain medications (25.6%) and trauma among the common etiologies in 215 children with AP.¹⁵ Another study from Italy conducted by Pezzilli et al. showed biliary diseases and viral infection as the main etiologies for AP in children¹⁴. Majbar et al. from UK reported gall stones, drugs and trauma as the causative factor for AP among 94 pediatric patients.¹⁶ The ethnic and geographic variations may be the reason for this difference in etiological factors among different studies. In this study, 22.6% children presented with RAP. RAP was seen commonly among males patients, and those patients who experienced local pancreatic complications at first attack and patients with anatomical defects, like choledochal cyst, pancreas divisum. previous studies reported the prevalence of RAP as 15 to 42% in^{14,15}. Su et al. reported the pancreaticobiliary anomalies (28%) as the leading etiology of pediatric RAP.¹⁴ In addition to our findings, first attack at young age, necrosis of pancreas and severe AP were the other risk factors for RAP.^{14,17} Lucidi et al. from Italy reported 78 (42.3%) pediatric patients with RAP with genetic predisposition as the etiology, whereas among 26% of the children etiological factor could not be found.⁸ In our study most (93.5%) of the patients had a smooth recovery with conservative management (P value; < 0.01%). Out of 77 only 5 patients developed complications which include pancreatic abscess and 4 were managed successfully, one patient expired due to sepsis. previous studies, showed a mortality associated with pediatric AP between 0.4-6% and were associated mainly with underlying etiologies/ comorbid

conditions.^{4,18} Eileen Viviana conducted a study showing conservative management in patients with AP as the main treatment strategy with good results.¹³ Guo et al. reported good outcome with medical management having minimal complications in their study and mortality of 5%.¹⁸

Our study shows an increase in AP among children in last few years. A study conducted by Elif Sağ et al, at Turkey reported an increasing incidence of AP among hospitalized children in recent years.⁸ Population based studies from different countries like India, United States and Australia showed similar results.^{13,15,18} this may be due to the increased awareness of AP in pediatric patients with mild symptoms and signs, easy availability of serum amylase and lipase testing in the emergency and ease of access to ultrasonography/CT Scan.

CONCLUSION

The incidence of acute pancreatitis is increasing in children. The Children having abdominal pain and vomiting must be thought for and investigated for the acute pancreatitis. Most of the patients with acute pancreatitis can be managed conservatively Except those with congenital anatomical defects.

Author's Contribution:

Concept & Design of Study: Muhammad Ramzan Bhutta
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Conflict of Interest: The study has no conflict of interest to declare by any author.

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