MAR Gastroenterology (2025) 4:02

Case Report

Levetiracetam - A Rare Cause of Acute Pancreatitis in Children

Dr Mridul Chandra Das (MBBS, MD, DNB, DM)[1*], Dr Arti Pawaria (MBBS, MD, DM)[1], [2]Dr Sachin Gupta (MBBS, MS, DNB)[2]

1. Senior Consultant/Assistant Professor, Department of Pediatric Gastroenterology and Hepatology, Amrita Institute of Medical Sciences, Faridabad, Delhi NCR.

2. Senior consultant, Department of Pediatric Neurosurgery, Amrita Institute of Medical Sciences, Faridabad, Delhi NCR.

[*]**Correspondence to:** Dr Mridul Chandra Das, Senior Consultant/Assistant Professor, Department of Pediatric Gastroenterology and Hepatology, Amrita Institute of Medical Sciences, Faridabad, Delhi NCR.

Received: 15 April 2025

Published: 02 May 2025

DOI: https://doi.org/10.5281/zenodo.15654605

Abstract:

Acute pancreatitis is acute inflammation of pancreas with significant morbidity and mortality, is increasing in children. Though biliary and idiopathic are the common causes of acute pancreatitis, drugs are sometimes may be the underlying cause of acute pancreatitis. Here, we report a rare case of levetiracetam induced acute pancreatitis in an adolescent boy.

Introduction

Acute pancreatitis is acute inflammation of pancreas, manifested clinically as pain abdomen, vomiting and elevated serum amylase and lipase. Clinically acute pancreatitis diagnosed as per ISPIRE criteria when two of the three criteria are fulfilled – 1. abdominal pain compatible with acute pancreatitis; 2. Elevated serum amylase and or lipase typically ≥3 times upper limit of normal; 3. Radiological changes (ultra sound, CT abdomen or MRI changes) consistent with acute pancreatitis (1). The etiology of acute pancreatitis in pediatric patients are biliary, blunt trauma abdomen, viral infection, anatomical malformation of pancreas, hypertriglyceridemia and hypercalcemia, drugs, genetic, post ERCP and idiopathic (2,3). Almost half of the cases etiology is idiopathic (4). Drug induced pancreatis is responsible in around 2.7% to 5.6% of cases (2,4). The drugs most commonly implicated are antiepileptic – carbamazepine, valproate; anticancer drugs- L-asparaginase, azathioprine and non-steroidal (4). Identifying the underlaying cause of acute pancreatitis is very important for treatment, prognosis and also to prevent future development of recurrence of pancreatitis and chronic pancreatitis. Levetiracetam is broad spectrum antiepileptic drugs used in seizure (5). It is very rarely implicated as a cause of acute pancreatitis (6, 7). Here, we report a case of moderately severe acute pancreatitis which could be due levetiracetam induced.

Case Summary

10 years old boy admitted with severe Pain Abdomen and Vomiting for 2 days. Pain was typically epigastric with back radiation, increased in intensity after meal and associated with vomiting. There was no history of fever, skin rash, loose stool and shortness of breath or blunt trauma abdomen. He had history head ache and projectile vomiting 2 months prior to the current illness, diagnosed as Colloid Cyst of Septum Pellucidum

and underwent surgery and post operative period was uneventful. Since surgery he was on seizure prophylaxis with Levetiracetam (500mg twice daily). He was not any other medication. There was no family history of pancreatitis or pancreatic carcinoma. Clinically patient was dehydrated, pale with tachycardia. Abdominal examination revealed mild distended abdomen with significant tenderness with guarding in the epigastric region. There was no hepatosplenomegaly and ascites. Chest examination showed decreased air entry on the left side of the chest. Cardiovascular and neurological examination did not show any abnormality. Laboratory tests: Complete blood counts - haemoglobin 12.2 gm/dl, WBC 16.3 X103 cells/µl, platelet counts 587X103 cells/µl; Liver function tests – Bilirubin Total: 1.24mg/dL, AST(SGOT): 27U/L, ALT[SGPT]: 25U/L, Alkaline Phosphatase (ALP): 133U/L Protein total: 4.90g/dL, Albumin: 3.22g/dL, Globulin: 1.60g/dL, GGT: 23.79 U/L. Renal function tests- Creatinine: 0.35mg/dL, Urea: 15mg/dL, BUN Blood Urea Nitrogen: 6.90mg/dL Sodium:135mEq/L, Potassium: 4.20mEq/L. CRP(C-reactive protein): 28 mg/dl Procalcitonin: 33.68ng/ml. Serum amylase 1513, Serum lipase 2219; Triglycerides- 70, Calcium-8.75. Ultra sound abdomen Hepatomegaly. Mildly enlarged with few ill-defined hypoechoic areas seen involving the pancreatic head and uncinate process and mild inflammatory peripancreatic fat stranding and fluid-Suggestive of Acute Pancreatitis. Mild left side pleural effusion. CECT abdomen (Fig 1)- Features are suggestive of Acute necrotizing pancreatitis. Modified CT SI score-8/10, Moderate ascites. Mild hepatomegaly. Mild left pleural effusion. MRCP- Hepatomegaly with wedge shaped hyper-intense T2 areas in sub-capsular region of right lobe of liver likely hemodynamic alteration. Bulky pancreas with peripancreatic fat stranding. CBD and GB are normal. PD is not dilated and essentially normal. He was diagnosed as acute pancreatitis with moderately severe (Modified Atlanta severity score). He was treated conservatively with judicious intravenous fluid, analgesic and proton pump inhibitors. Levetiracetam was stopped and changed to Lacosamide. Patient showed improvement. Pain decreased and gradually oral diet was introduced and IVF was tapper off as he tolerated oral diet. His pleural effusion and ascites improved. He was discharged home after 12 days of hospitalisation. He was followed up 6 months. There was no recurrence of pancreatitis and he was absolutely normal. Follow up ultra sound showed normal pancreas.

Discussion

Acute pancreatitis is a common inflammatory disease of pancreas. In the recent decade acute pancreatitis in children is in the increasing trends (4). As compared to adult, pancreatitis in children usually has good prognosis but can be life threatening. Acute pancreatitis can lead to recurrent acute pancreatitis and eventually into chronic pancreatis leading to significant morbidity if underlying cause not being identified

and treated (4). Though biliary and idiopathic causes are most common causes but drug is responsible in around 5.6% cases of acute pancreatitis in children (4). Drug induced pancreatitis usually have very good prognosis, once the implicated drug is withdrawn.

Levetiracetam is a broad-spectrum anti-epileptic with good safety profile even in children (5). Recently it has been shown that it could be a cause for acute pancreatitis (6, 7). To diagnose drug induced acute pancreatitis, important step to rule out common causes of acute pancreatitis like biliary, metabolic, viral infection, trauma and structural causes. To determine the probability of adverse drug reacting, Naranjo adverse drug reacting (ADR) probability scale is used (8). A total score of 9 or more indicates ADR highly Probable; score 5 to 8, ADR is probable; score 1 to 4 ADR is Possible; score 0 or Less indicates ADR is doubtful. We applied Naranjo adverse drug reaction probability scale after exclusion of the usual causes of pancreatitis. The score was reached to 7, indicating that levetiracetam is the probable cause of acute pancreatitis in our case. To confirmed the ADR, one need to challenge with the drug to reproduce the event and then remove the drug to show ADR improved. We did not perform re-challenge with levetiracetam in our case due to severity complication of pancreatitis. The mechanism how levetiracetam causes acute pancreatitis is not known but has been postulated due to dose depended or idiosyncratic reaction.

Conclusion

Drug induced acute pancreatitis though rare, one should consider after rolling out of common causes. Levetiracetam a broad-spectrum anti-epileptic is not commonly considered as a cause of drug induced acute pancreatitis. Pediatrician should keep in mind that levetiracetam rarely can be a cause of acute pancreatitis.

Reference

1. Abu-El-Haija M, Kumar S, Quiros JA, Balakrishnan K, Barth B, Bitton S, et al. Management of acute pancreatitis in the pediatric population: a clinical report from the North American society for pediatric gastroenterology, hepatology and nutrition pancreas committee. J Pediatr Gastroenterol Nutr. 2018;66(1):159–76).

2. Wang, Chaohui, Fu, Bao, Su, De, Huang, Ping, Fu, Xiaoyun, Acute Pancreatitis and Recurrent Acute Pancreatitis in Children: A 10-Year Retrospective Study, Gastroenterology Research and Practice, 2022, 5505484, 6 pages, 2022. https://doi.org/10.1155/2022/5505484;

3. Zhong, R., Tan, S., Peng, Y. et al. Clinical characteristics of acute pancreatitis in children: a single-center experience in Western China. BMC Gastroenterol 21, 116 (2021). https://doi.org/10.1186/s12876-021-01706-8).

4. Poddar U, Yachha SK, Borkar V, Srivastava A, Kumar S. A Report of 320 Cases of Childhood Pancreatitis: Increasing Incidence, Etiologic Categorization, Dynamics, Severity Assessment, and Outcome. Pancreas. 2017 Jan;46(1):110-115. doi: 10.1097/MPA.0000000000000733. PMID: 27846143).

5. Wang H, Wang H, Liu Y, Zhao J, Niu X, Zhu L, Ma X, Zong Y, Huang Y, Zhang W, Han Y. Efficacy and Safety of Five Broad-Spectrum Antiseizure Medications for Adjunctive Treatment of Refractory Epilepsy: A Systematic Review and Network Meta-analysis. CNS Drugs. 2023 Oct;37(10):883-913. doi: 10.1007/s40263-023-01029-0. Epub 2023 Aug 17. PMID: 37589821).

6. Azar NJ, Aune P. Acute pancreatitis and elevated liver transaminases after rapid titration of oral levetiracetam. J Clin Neurosci. 2014;21(6):1053 1054. doi: 10.1016/j.jocn.2013.08.016.

7. Karahan HT, Tanoğlu A, Şenoymak MC, et al. Levetiracetam induced acute pancreatitis: an uncommon case report. Intercont J Int Med. 2023;1(3):71-72.).

8. Naranjo CA, Busto U, Sellers EM, et al. A method for estimating the probability of adverse drug reactions. Clin Pharmacol Ther. 1981;30(2):239Y245).

Medtronic