

World Journal of *Clinical Cases*

World J Clin Cases 2020 April 26; 8(8): 1343-1560



**GUIDELINES**

- 1343** Prevention program for the COVID-19 in a children's digestive endoscopy center
Ma XP, Wang H, Bai DM, Zou Y, Zhou SM, Wen FQ, Dai DL

REVIEW

- 1350** Predictive factors for central lymph node metastases in papillary thyroid microcarcinoma
Wu X, Li BL, Zheng CJ, He XD
- 1361** Probiotic mixture VSL#3: An overview of basic and clinical studies in chronic diseases
Cheng FS, Pan D, Chang B, Jiang M, Sang LX

MINIREVIEWS

- 1385** Hypertransaminasemia in the course of infection with SARS-CoV-2: Incidence and pathogenetic hypothesis
Zippi M, Fiorino S, Occhigrossi G, Hong W
- 1391** Stability and infectivity of coronaviruses in inanimate environments
Ren SY, Wang WB, Hao YG, Zhang HR, Wang ZC, Chen YL, Gao RD
- 1400** Status, challenges, and future prospects of stem cell therapy in pelvic floor disorders
Cheng J, Zhao ZW, Wen JR, Wang L, Huang LW, Yang YL, Zhao FN, Xiao JY, Fang F, Wu J, Miao YL

ORIGINAL ARTICLE**Retrospective Study**

- 1414** Bedside score predicting retained common bile duct stone in acute biliary pancreatitis
Khoury T, Kadah A, Mahamid M, Mari A, Sbeit W

Observational Study

- 1424** Clinicopathological differences and correlations between right and left colon cancer
Kalantzis I, Nonni A, Pavlakis K, Delicha EM, Miltiadou K, Kosmas C, Ziras N, Gkoumas K, Gakiopoulou H
- 1444** Hemodynamic characteristics in preeclampsia women during cesarean delivery after spinal anesthesia with ropivacaine
Zhao N, Xu J, Li XG, Walline JH, Li YC, Wang L, Zhao GS, Xu MJ

CASE REPORT

- 1454** Mucosa-associated lymphoid tissue lymphoma simulating Crohn's disease: A case report
Stundiene I, Maksimaityte V, Liakina V, Valantinas J

- 1463** Suicide attempt using potassium tablets for congenital chloride diarrhea: A case report
Iijima S
- 1471** Embolization of pancreatic arteriovenous malformation: A case report
Yoon SY, Jeon GS, Lee SJ, Kim DJ, Kwon CI, Park MH
- 1477** Novel frameshift mutation in the SACS gene causing spastic ataxia of charlevoix-saguenay in a consanguineous family from the Arabian Peninsula: A case report and review of literature
Al-Ajmi A, Shamsah S, Janicijevic A, Williams M, Al-Mulla F
- 1489** Duodenal mature teratoma causing partial intestinal obstruction: A first case report in an adult
Chansoon T, Angkathunyakul N, Aroonroch R, Jirasiritham J
- 1495** Rare anaplastic sarcoma of the kidney: A case report
Kao JL, Tsung SH, Shiao CC
- 1502** Unusual association of Axenfeld-Rieger syndrome and wandering spleen: A case report
Chang YL, Lin J, Li YH, Tsao LC
- 1507** Primary cutaneous mantle cell lymphoma: Report of a rare case
Zheng XD, Zhang YL, Xie JL, Zhou XG
- 1515** Typical ulcerative colitis treated by herbs-partitioned moxibustion: A case report
Lin YY, Zhao JM, Ji YJ, Ma Z, Zheng HD, Huang Y, Cui YH, Lu Y, Wu HG
- 1525** Bronchogenic cyst of the stomach: A case report
He WT, Deng JY, Liang H, Xiao JY, Cao FL
- 1532** Laparoscopic umbilical trocar port site endometriosis: A case report
Ao X, Xiong W, Tan SQ
- 1538** Unusual presentation of congenital radioulnar synostosis with osteoporosis, fragility fracture and nonunion: A case report and review of literature
Yang ZY, Ni JD, Long Z, Kuang LT, Tao SB
- 1547** Hydatidiform mole in a scar on the uterus: A case report
Jiang HR, Shi WW, Liang X, Zhang H, Tan Y
- 1554** Pulmonary contusion mimicking COVID-19: A case report
Chen LR, Chen ZX, Liu YC, Peng L, Zhang Y, Xu Q, Lin Q, Tao YM, Wu H, Yin S, Hu YJ

ABOUT COVER

Editorial Board Member of *World Journal of Clinical Cases*, Steven M Schwarz, MD, Professor, Department of Pediatrics, SUNY-Downstate Medical Center, Brooklyn, NY 11203, United States

AIMS AND SCOPE

The primary aim of *World Journal of Clinical Cases* (WJCC, *World J Clin Cases*) is to provide scholars and readers from various fields of clinical medicine with a platform to publish high-quality clinical research articles and communicate their research findings online.

WJCC mainly publishes articles reporting research results and findings obtained in the field of clinical medicine and covering a wide range of topics, including case control studies, retrospective cohort studies, retrospective studies, clinical trials studies, observational studies, prospective studies, randomized controlled trials, randomized clinical trials, systematic reviews, meta-analysis, and case reports.

INDEXING/ABSTRACTING

The WJCC is now indexed in PubMed, PubMed Central, Science Citation Index Expanded (also known as SciSearch®), and Journal Citation Reports/Science Edition. The 2019 Edition of Journal Citation Reports cites the 2018 impact factor for WJCC as 1.153 (5-year impact factor: N/A), ranking WJCC as 99 among 160 journals in Medicine, General and Internal (quartile in category Q3).

RESPONSIBLE EDITORS FOR THIS ISSUE

Responsible Electronic Editor: Ji-Hong Liu

Proofing Production Department Director: Xiang Li

Responsible Editorial Office Director: Jin-Lai Wang

NAME OF JOURNAL

World Journal of Clinical Cases

ISSN

ISSN 2307-8960 (online)

LAUNCH DATE

April 16, 2013

FREQUENCY

Semimonthly

EDITORS-IN-CHIEF

Dennis A Bloomfield, Bao-Gan Peng, Sandro Vento

EDITORIAL BOARD MEMBERS

<https://www.wjgnet.com/2307-8960/editorialboard.htm>

PUBLICATION DATE

April 26, 2020

COPYRIGHT

© 2020 Baishideng Publishing Group Inc

INSTRUCTIONS TO AUTHORS

<https://www.wjgnet.com/bpg/gerinfo/204>

GUIDELINES FOR ETHICS DOCUMENTS

<https://www.wjgnet.com/bpg/GerInfo/287>

GUIDELINES FOR NON-NATIVE SPEAKERS OF ENGLISH

<https://www.wjgnet.com/bpg/gerinfo/240>

PUBLICATION ETHICS

<https://www.wjgnet.com/bpg/GerInfo/288>

PUBLICATION MISCONDUCT

<https://www.wjgnet.com/bpg/gerinfo/208>

ARTICLE PROCESSING CHARGE

<https://www.wjgnet.com/bpg/gerinfo/242>

STEPS FOR SUBMITTING MANUSCRIPTS

<https://www.wjgnet.com/bpg/GerInfo/239>

ONLINE SUBMISSION

<https://www.f6publishing.com>

Suicide attempt using potassium tablets for congenital chloride diarrhea: A case report

Shigeo Iijima

ORCID number: Shigeo Iijima
(0000-0003-3391-3757).

Author contributions: Iijima S performed the disease consultation, acquired the clinical data, reviewed the literature, and drafted the manuscript.

Informed consent statement: Informed written consent was obtained from the patient for publication of this report.

Conflict-of-interest statement: The author declares no conflicts of interest.

CARE Checklist (2016) statement: The author has read the CARE Checklist (2016), and the manuscript was prepared and revised according to the CARE Checklist (2016).

Open-Access: This article is an open-access article that was selected by an in-house editor and fully peer-reviewed by external reviewers. It is distributed in accordance with the Creative Commons Attribution NonCommercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>

Manuscript source: Unsolicited manuscript

Received: December 17, 2019

Peer-review started: December 17,

Shigeo Iijima, Department of Pediatrics, Hamamatsu University School of Medicine, Hamamatsu 4313192, Japan

Corresponding author: Shigeo Iijima, MD, PhD, Associate Professor, Department of Regional Neonatal-Perinatal Medicine, Hamamatsu University School of Medicine, 1-20-1 Handayama, Higashi-ku, Hamamatsu 4313192, Shizuoka, Japan. sige_pd@yahoo.co.jp

Abstract

BACKGROUND

Congenital chloride diarrhea (CCD) is a rare inherited disorder of intestinal electrolyte transport that results in a large wastage of electrolytes and water. Advances in substitution therapy using sodium chloride (NaCl) and potassium chloride (KCl) have dramatically improved survival for patients with CCD. Slow-release KCl is widely prescribed as a potassium supplement; however, it has also occasionally been used in suicide attempts, as potassium poisoning can generate life-threatening hyperkalemia.

CASE SUMMARY

A 26-year-old female presented to the emergency department (ED) with self-poisoning, having taken 30 tablets of slow-release KCl (total: 240 mmol potassium) following an auditory hallucination. The patient had been undergoing substitution therapy with NaCl and KCl for CCD and been followed up in the pediatric department. One month prior, she developed insomnia and anxiety and had consulted a psychiatrist. At the ED, although her general condition was good, she appeared agitated. Her serum potassium level was 7.0 mmol/L, indicating hyperkalemia, and electrocardiographic changes showed tenting of the T-waves. She responded to the administration of calcium gluconate, sodium bicarbonate, and insulin with glucose, and the serum potassium level improved. Finally, she was diagnosed with schizophrenia.

CONCLUSION

In CCD management, physicians should pay careful attention to patients' extraintestinal issues, including psychological disorders that may emerge in adulthood.

Key words: Congenital chloride diarrhea; Substitution therapy; Suicide; Potassium overdose; Schizophrenia; Case report

©The Author(s) 2020. Published by Baishideng Publishing Group Inc. All rights reserved.

2019

First decision: February 26, 2020

Revised: March 2, 2020

Accepted: April 10, 2020

Article in press: April 10, 2020

Published online: April 26, 2020

P-Reviewer: Cui CY

S-Editor: Wang J

L-Editor: A

E-Editor: Liu JH


Core tip: The main treatment for congenital chloride diarrhea (CCD) is life-long substitution therapy using sodium chloride and potassium chloride. An oral potassium supplement overdose is rare but can cause life-threatening hyperkalemia in cases of intentional high-dosage ingestion. We encountered an adult patient with CCD who developed hyperkalemia due to self-poisoning of prescribed potassium chloride tablets. In patients with CCD, physicians need to consider extraintestinal issues that patients can encounter as they get older, along with the challenges they face concerning life-long diarrhea. It is especially important to be aware of any potential psychiatric disorders that may cause life-threatening sequelae.

Citation: Iijima S. Suicide attempt using potassium tablets for congenital chloride diarrhea: A case report. *World J Clin Cases* 2020; 8(8): 1463-1470

URL: <https://www.wjnet.com/2307-8960/full/v8/i8/1463.htm>

DOI: <https://dx.doi.org/10.12998/wjcc.v8.i8.1463>

INTRODUCTION

Congenital chloride diarrhea (CCD, OMIM 214700) is a rare autosomal recessive disease of impairment in intestinal $\text{Cl}^-/\text{HCO}_3^-$ exchange, due to mutations in the solute carrier family 26 member 3 (*SLC26A3*, OMIM 126650) gene, and is characterized by persistent, life-long, watery diarrhea with a high fecal chloride concentration ($> 90 \text{ mmol/L}$)^[1]. Worldwide, more than 250 cases of CCD have been reported^[2]. Without treatment, most children die in infancy or survive with severely delayed psychomotor development. Advances in substitution therapy with sodium chloride (NaCl) and potassium chloride (KCl) have dramatically improved the survival of these patients, and the long-term prognosis of appropriately managed CCD has been reported to be favorable^[3].

Although KCl is extensively used to supplement potassium as a therapeutic modality, potassium administration is also known to be a means in suicide/homicide attempts or in lethal procedures for state-sanctioned capital punishment. Potassium poisoning can cause life-threatening hyperkalemia, as harmful effects on the electric activity of the heart are the most important consequences of hyperkalemia. When serum potassium levels exceed 7 mmol/L , remarkable arrhythmic changes can be observed using electrocardiography. With serum potassium levels $\geq 8 \text{ mmol/L}$, sudden cardiac arrest can occur^[4].

We encountered an adult patient with CCD who had attempted suicide through ingesting a large number of KCl tablets that had been prescribed for substitution therapy. No previous studies have focused on mental or psychiatric disorders involving patients with CCD, and no studies have reported the challenges facing patients with CCD related to life-long substitution therapy.

CASE PRESENTATION

Chief complaints

A 26-year-old female presented to the emergency department (ED) complaining of epigastric discomfort and nausea.

History of present illness

One month prior, the patient had developed insomnia and anxiety due to domestic difficulties. She consulted a psychiatrist and was prescribed anti-anxiety and hypnotic medications relevant to a diagnosis of adjustment disorders. On the day of the ED visit, she had experienced an auditory hallucination and had ingested 30 tablets of slow-release KCl (each tablet containing 8 mmol potassium) in a suicide attempt. She then called her father because of the epigastric discomfort and nausea and he transported her to the ED four hours after ingestion.

History of past illness

At 16 months old, this patient was diagnosed with CCD based on hypochloremic alkalosis, hyponatremia, hypokalemia with increased plasma renin and aldosterone levels, and high fecal Cl^- . In this case, because repeated sweat testing showed normal

Cl⁻ concentration and because pulmonary illness did not develop during her clinical course, we are sure that the patient did not have cystic fibrosis. She has undergone substitution therapy with NaCl and KCl. On follow-up, watery diarrhea persisted, but she developed normally. In adulthood, she married and produced a healthy child after an uneventful pregnancy at the age of 24 years. Subsequently, the patient continued to visit the pediatric outpatient clinic four times a year. Her usual serum electrolyte concentrations were as follows: Na⁺: 140-143 mmol/L; K⁺: 2.8-3.4 mmol/L, and Cl⁻: 96-100 mmol/L, with a daily substitution of 48 mmol slow-release KCl. In this case, genetic diagnosis was considered; however, the patient did not approve of this diagnostic method and therefore, it was not performed.

Personal and family history

This patient was born with polyhydramnios at 36 wk gestation and weighing 2550 g. Both her parents are healthy but consanguineous. Her grandmother's brother died immediately after birth; however, the cause of death was unclear.

Physical examination

The patient was agitated, but her general condition was good. Her pulse rate was 105 beats/min and her blood pressure was 101/77 mmHg.

Laboratory examinations

Initial laboratory blood test results were as follows: pH: 7.419; partial pressure of carbon dioxide (CO₂): 30.8 mmHg; bicarbonate (HCO₃⁻): 20.0 mmol/L; base excess (BE): -5.0; Na⁺: 139 mmol/L; K⁺: 7.0 mmol/L; Cl⁻: 105 mmol/L; urea nitrogen: 7.3 mg/dL, and creatinine: 0.52 mg/dL.

Imaging examinations

Electrocardiographic changes of hyperkalemia were observed, with tenting of T-waves and smaller P-waves.

FINAL DIAGNOSIS

Hyperkalemia due to self-poisoning with slow-release KCl tablets in a suicide attempt.

TREATMENT

The hyperkalemia was treated with an intravenous injection of 8.5% calcium gluconate (20 mL) and 8.4% sodium bicarbonate (40 mL), and insulin with glucose infusion therapy (5 units of regular insulin (Humulin-R) and 20 g of glucose/hour) was started. The patient responded to treatment and, at six hours post-initiation of treatment, the serum potassium level had corrected to 4.0 mmol/L.

OUTCOME AND FOLLOW-UP

The patient was referred to the psychiatry department and was diagnosed with schizophrenia. She was subsequently admitted to an inpatient unit for treatment of her acute presentation with atypical antipsychotics (aripiprazole and risperidone), and she showed significant improvement. Concerning her present CCD management, the substitution therapy with slow-release KCl has been continued with very careful monitoring of this patient because of the lack of an alternative.

DISCUSSION

This is the first report focusing on mental or psychiatric disorders involving patients with CCD and the challenges facing these patients related to life-long substitution therapy. Despite persistent diarrhea, it has been reported that most patients with CCD appear to adjust to their condition and experience only minimal social disadvantage^[5]. Moreover, ≥ 90% of patients with CCD are reported to consider their general health as excellent or good^[3]. The patient presented in this report had acceptable growth, normal development, an uneventful pregnancy, and the delivery of a healthy child. Nevertheless, she had attempted suicide and was diagnosed with schizophrenia. The relationship between CCD and mental or psychiatric disorders remains unclear.

Episodes of dehydration can result in mental and psychomotor impairment. In fact, this patient had often been hospitalized with dehydration due to acute gastroenteritis. In a clinical analysis of 21 Finnish patients with CCD published in 1977^[6], one patient was reported to have had severe psychological difficulties, the details of which are not known, and the authors in that report indicated that those psychological issues were apparently unrelated to CCD. A recently published nationwide study in Japan reported that 23% of children with CCD had a neurodevelopmental or neuropsychiatric disorder in terms of their long-term outcomes^[7]; however, the prevalence of various psychiatric disorders such as depression and schizophrenia in adult patients has not been reported. It is likely that long-term clinical outcomes have neither been captured nor recorded consistently in a standardized manner. Some patients with CCD have been reported to have developed inflammatory bowel disease (IBD)^[2,8]. In IBD, psychiatric comorbidity is well recognized^[9], and one recent study found a higher incidence of schizophrenia in an IBD cohort compared to controls^[10]. Furthermore, an increased risk of a suicide attempt or ideation has been noted as a concern in patients with IBD^[11]. Schizophrenia is a very common form of mental illness and its onset is significantly influenced through environmental factors or stressors^[12]. One study showed that 30% of patients with schizophrenia had attempted suicide at least once during their lifetime^[13]. A systematic review exploring suicide risk in patients with schizophrenia suggested that the risk factors leading to suicide appeared mainly related to stress^[14]. In CCD, soiling remains common at all ages and, in adulthood, minor soiling has been reported to occur at night when sleeping or during physical exertion^[3]. In addition to stress from persistent diarrhea, patients with CCD who appear socially adjusted may come under considerable physical or social stress after gaining independence from their parents and taking responsibility for their own lives. Following the critical childhood period, most patients with CCD visit the outpatient clinic only once or twice a year for routine examinations and prescriptions^[3]. Moreover, most patients with CCD have previously only been followed by a pediatrician^[4], who may not be able to recognize or address psychological problems unique to adulthood. Challenges facing adult patients with CCD, including mental health issues, should be investigated in detail, and psychological counseling may be required to improve a patient's quality of life.

Regarding the therapeutic management of CCD, substitution using NaCl and KCl involves physiological changes and normally has no side-effects^[5]. However, an overdose of KCl can generate severe hyperkalemia, leading to serious sequelae. Although poisoning events using drugs and chemicals are common, reports of potassium poisoning, especially in regard to oral self-poisoning, are rare. There are no large case series concerning potassium overdoses in the medical literature. An extensive medical literature search revealed only 13 case reports involving a total of 19 patients having had slow-release potassium poisoning (Table 1)^[4,15-26]. Cases involving fatalities and survivors have both been reported. According to those case reports, even in previously healthy patients, ingestion of more than 20 tablets of slow-release potassium at once can cause severe hyperkalemia to develop over several hours, requiring intensive care. However, it takes a much smaller dose of ingested potassium to produce lethal toxicity in patients with compromised renal function than in those with normal renal function^[19]. Although our patient had normal renal function, a relatively high incidence (28%) of chronic kidney disease was reported in a Finnish study of patients with CCD^[2].

Therefore, when a patient with CCD develops a psychiatric disorder that may risk an attempt at suicide, other medication should be considered. However, therapeutic attempts to manage diarrhea using cholestyramine, omeprazole, and butyrate have not been as successful as hoped, suggesting that NaCl and KCl supplementation will continue to be more important than antidiarrheal therapy^[1-3,7].

CONCLUSION

In patients with CCD, diarrhea is life-long and various extraintestinal issues may also emerge as patients become older unless an optimal radical therapy is established. Therefore, physicians need to pay careful attention not only to patients' physical conditions but also to their mental health throughout their long-term follow-up, to ensure that any subsequent psychiatric disorders do not adversely affect CCD outcomes.

Table 1 Cases of suicidal poisonings associated with an oral intake of slow-release potassium chloride

Ref.	Age/Sex	Underlying disease	Psychiatric disorder	Amount of K ingested	Time (h) from ingestion to arrival at ED	Peak serum K level (mmol/L)	Symptoms	ECG findings	Treatment	Outcome
Illingworth <i>et al</i> ^[15] , 1980	36/M	Hypertension treated with thiazide diuretic	NR	Unknown	5	8.9	Vomiting	Wide QRS complex, hyperacute T-waves, short runs of ventricular tachycardia	Calcium gluconate, sodium bicarbonate, insulin/glucose, frusemide, ion exchange resin	Survived
Illingworth <i>et al</i> ^[15] , 1980	58/F	Hypertension treated with thiazide diuretic	NR	20 T/168 mmol	5	9.1	Vomiting, sweating, breathlessness, cyanosis	Hyperacute T-waves, left bundle-branch block	Insulin/glucose, frusemide, gastric lavage, ion exchange resin	Survived
Illingworth <i>et al</i> ^[15] , 1980	59/F	NR	NR	40 T/320 mmol	3.5	9.3	Vomit, cardiac arrest	Asystole	Gastric lavage	Died
Saxena ^[4] , 1988	46/F	NR	Depression	100 T/800 mmol	1	9.6	Cardiac arrest	NR	Calcium gluconate, sodium bicarbonate, insulin/glucose, gastric lavage, activated charcoal, cathartic	Died
Steedma ^[16] , 1988	27/F	Hypokalemia due to anorexia	Anorexia nervosa	60 T/480 mmol	12	9.1	Cyanosis, cold extremities, poor peripheral pulse	1st degree heart block, wide QRS complex, hyperacute T-waves	Calcium gluconate, sodium bicarbonate, insulin/glucose, ion exchange resin	Survived
Colledge <i>et al</i> ^[17] , 1988	24/M	NR	NR	100 T/800 mmol	2	7.9	Vomiting	Hyperacute T-waves, sinus tachycardia, ventricular tachycardia	Calcium gluconate, sodium bicarbonate, insulin/glucose, gastric lavage, ion exchange resin	Survived
Peeters <i>et al</i> ^[18] , 1998	62/F	NR	Depression	300 T/2400 mmol	NR	NR	Abdominal distention	NR	Endoscopic removal	Survived
Su <i>et al</i> ^[19] , 2001	50/F	Hypertension	Anxiety disorder, depression	100 T/1000 mmol	1	9.7	Cramping abdominal pain, tachycardia	Hyperacute T-waves	Calcium chloride, sodium bicarbonate, insulin/glucose, gastric lavage, whole bowel irrigation, hemodialysis	Survived
	17/F	None	None	30 T/300 mmol	10	6.1	Nausea, vomiting, diarrhea	Tachycardia	Whole bowel irrigation	Survived

Wan <i>et al</i> ^[20] , 2007	86/M	Hypertension treated with thiazide diuretic	Dementia	70 T/560 mmol	NR	6.8	Unknown	No feature of hyperkalemia	Calcium gluconate, sodium bicarbonate, insulin/glucose	Survived
Höjer <i>et al</i> ^[21] , 2008	28/F ¹	Unknown disease with pacemaker in situ	Borderline personality disorder	100 C/1000 mmol	3	9.2	Cardiac arrest	Pacemaker capture	Calcium gluconate, sodium bicarbonate, insulin/glucose, gastric lavage, activated charcoal, ion exchange resin, hemodialysis	Survived
	28/F ¹	Unknown disease with pacemaker in situ	Borderline personality disorder	100 C/1000 mmol	1	6.9	Cardiac arrest	Pacemaker rhythm	Calcium gluconate, sodium bicarbonate, insulin/glucose, gastric lavage, activated charcoal, ion exchange resin	Survived
	28/F ¹	Unknown disease with pacemaker in situ	Borderline personality disorder	70 C/700 mmol	2.5	7.1	NR	Hyperacute T-waves	Sodium bicarbonate, insulin/glucose, ion exchange resin	Survived
Bosse <i>et al</i> ^[22] , 2011	56/F	NR	Depression	60 T/480 mmol	5	11	Lethargy	Complex sine-wave rhythm	Calcium gluconate, sodium bicarbonate, insulin/glucose	Survived
Gunja ^[23] , 2011	42/F ²	NR	Bipolar disorder	40 T/320 mmol	1.5	5.5	NR	Sinus tachycardia, tall T-waves	Insulin, whole bowel irrigation	Survived
	42/F ²	NR	Bipolar disorder	100 T/800 mmol	5	8.5	Tachycardia	Sinus tachycardia, tall T-waves	Calcium chloride, sodium bicarbonate, insulin, hemodialysis	Survived
Nilsson <i>et al</i> ^[24] , 2012	30/F	NR	Depression	300 T/3000 mmol	5	10.3	Drowsiness, daze	Sine-wave tachycardia	Calcium gluconate, sodium bicarbonate, insulin/glucose, gastric lavage, ion exchange resin, hemodialysis, surgical removal	Survived
Guillermo <i>et al</i> ^[25] , 2014	42/F	NR	Borderline personality disorder	100 T/800 mmol	2	3.9	Somnolence	Sinus tachycardia	Gastric lavage, activated charcoal, endoscopic removal	Survived

Briggs <i>et al</i> ^[26] , 2014	44/F	Hypo-kalemia	Anxiety disorder	30 T/600 mmol	1.25	7.3	NR	Mildly peaked T-waves	Calcium gluconate, sodium bicarbonate, insulin/glucose, whole bowel irrigation, ion exchange resin, endoscopic removal	Survived
--	------	--------------	------------------	---------------	------	-----	----	-----------------------	--	----------

^{1,2}; Same patient, respectively; C: Capsule; ECG: Electrocardiogram; ED: Emergency department; F: Female; K: Potassium; M: Male; NR: Not reported; T: Tablet.

REFERENCES

- Höglund P, Holmberg C, Sherman P, Kere J. Distinct outcomes of chloride diarrhoea in two siblings with identical genetic background of the disease: implications for early diagnosis and treatment. *Gut* 2001; **48**: 724-727 [PMID: 11302976 DOI: 10.1136/gut.48.5.724]
- Wedenoja S, Höglund P, Holmberg C. Review article: the clinical management of congenital chloride diarrhoea. *Aliment Pharmacol Ther* 2010; **31**: 477-485 [PMID: 19912155 DOI: 10.1111/j.1365-2036.2009.04197.x]
- Hihnala S, Höglund P, Lammi L, Kokkonen J, Ormälä T, Holmberg C. Long-term clinical outcome in patients with congenital chloride diarrhea. *J Pediatr Gastroenterol Nutr* 2006; **42**: 369-375 [PMID: 16641574 DOI: 10.1097/01.mpg.0000214161.37574.9a]
- Saxena K. Death from potassium chloride overdose. *Postgrad Med* 1988; **84**: 97-98, 101-102 [PMID: 3387363 DOI: 10.1080/00325481.1988.11700337]
- Holmberg C. Congenital chloride diarrhoea. *Clin Gastroenterol* 1986; **15**: 583-602 [PMID: 3527496]
- Holmberg C, Perheentupa J, Launiala K, Hallman N. Congenital chloride diarrhoea. Clinical analysis of 21 Finnish patients. *Arch Dis Child* 1977; **52**: 255-267 [PMID: 324405 DOI: 10.1136/adc.52.4.255]
- Konishi KI, Mizuochi T, Yanagi T, Watanabe Y, Ohkubo K, Ohga S, Maruyama H, Takeuchi I, Sekine Y, Masuda K, Kikuchi N, Yotsumoto Y, Ohtsuka Y, Tanaka H, Kudo T, Noguchi A, Fuwa K, Mushiaki S, Ida S, Fujishiro J, Yamashita Y, Taguchi T, Yamamoto K. Clinical Features, Molecular Genetics, and Long-Term Outcome in Congenital Chloride Diarrhea: A Nationwide Study in Japan. *J Pediatr* 2019; **214**: 151-157.e6 [PMID: 31477378 DOI: 10.1016/j.jpeds.2019.07.039]
- Asano K, Matsushita T, Umeno J, Hosono N, Takahashi A, Kawaguchi T, Matsumoto T, Matsui T, Kakuta Y, Kinouchi Y, Shimosegawa T, Hosokawa M, Arimura Y, Shinomura Y, Kiyohara Y, Tsunoda T, Kamatani N, Iida M, Nakamura Y, Kubo M. A genome-wide association study identifies three new susceptibility loci for ulcerative colitis in the Japanese population. *Nat Genet* 2009; **41**: 1325-1329 [PMID: 19915573 DOI: 10.1038/ng.482]
- Engelmann G, Erhard D, Petersen M, Parzer P, Schlarb AA, Resch F, Brunner R, Hoffmann GF, Lenhart H, Richterich A. Health-related quality of life in adolescents with inflammatory bowel disease depends on disease activity and psychiatric comorbidity. *Child Psychiatry Hum Dev* 2015; **46**: 300-307 [PMID: 24838299 DOI: 10.1007/s10578-014-0471-5]
- Bernstein CN, Hitchon CA, Walld R, Bolton JM, Sareen J, Walker JR, Graff LA, Patten SB, Singer A, Lix LM, El-Gabalawy R, Katz A, Fisk JD, Marrie RA; CIHR Team in Defining the Burden and Managing the Effects of Psychiatric Comorbidity in Chronic Immunoinflammatory Disease. Increased Burden of Psychiatric Disorders in Inflammatory Bowel Disease. *Inflamm Bowel Dis* 2019; **25**: 360-368 [PMID: 29986021 DOI: 10.1093/ibd/izy235]
- Butwicka A, Olén O, Larsson H, Halfvarson J, Almqvist C, Lichtenstein P, Serlachius E, Frisén L, Ludvigsson JF. Association of Childhood-Onset Inflammatory Bowel Disease With Risk of Psychiatric Disorders and Suicide Attempt. *JAMA Pediatr* 2019; **173**: 969-978 [PMID: 31424531 DOI: 10.1001/jama-pediatrics.2019.2662]
- Day R, Nielsen JA, Korten A, Ernberg G, Dube KC, Gebhart J, Jablensky A, Leon C, Marsella A, Olatawura M. Stressful life events preceding the acute onset of schizophrenia: a cross-national study from the World Health Organization. *Cult Med Psychiatry* 1987; **11**: 123-205 [PMID: 3595169 DOI: 10.1007/bf00122563]
- Radomsky ED, Haas GL, Mann JJ, Sweeney JA. Suicidal behavior in patients with schizophrenia and other psychotic disorders. *Am J Psychiatry* 1999; **156**: 1590-1595 [PMID: 10518171 DOI: 10.1176/ajp.156.10.1590]
- Hettige NC, Bani-Fatemi A, Sakinofsky I, De Luca V. A biopsychosocial evaluation of the risk for suicide in schizophrenia. *CNS Spectr* 2018; **23**: 253-263 [PMID: 28535835 DOI: 10.1017/S1092852917000128]
- Illingworth RN, Proudfoot AT. Rapid poisoning with slow-release potassium. *Br Med J* 1980; **281**: 485-486 [PMID: 7427333 DOI: 10.1136/bmj.281.6238.485]
- Steedman DJ. Poisoning with sustained release potassium. *Arch Emerg Med* 1988; **5**: 206-211 [PMID: 3233133 DOI: 10.1136/emj.5.4.206]
- Colledge NR, Northridge B, Fraser DM. Survival after massive overdose of slow-release potassium. *Scott Med J* 1988; **33**: 279 [PMID: 3175610 DOI: 10.1177/003693308803300314]
- Peeters JW, van der Werf SD. Gastric stenosis after potassium chloride ingestion. *Endoscopy* 1998; **30**: S110 [PMID: 9932776 DOI: 10.1055/s-2007-1004345]
- Su M, Stork C, Ravuri S, Lavoie T, Anguish D, Nelson LS, Hoffman RS. Sustained-release potassium chloride overdose. *J Toxicol Clin Toxicol* 2001; **39**: 641-648 [PMID: 11762675 DOI: 10.1081/clt-100108499]
- Wan CK, Tong HK. A case of slow release potassium chloride overdose. *Hong Kong J Emerg Med* 2007;

- 14: 169-173 [DOI: [10.1177/102490790701400307](https://doi.org/10.1177/102490790701400307)]
- 21 **Höjer J**, Forsberg S. Successful whole bowel irrigation in self-poisoning with potassium capsules. *Clin Toxicol (Phila)* 2008; **46**: 1102-1103 [PMID: [18951269](https://pubmed.ncbi.nlm.nih.gov/18951269/) DOI: [10.1080/15563650802415165](https://doi.org/10.1080/15563650802415165)]
- 22 **Bosse GM**, Platt MA, Anderson SD, Presley MW. Acute oral potassium overdose: the role of hemodialysis. *J Med Toxicol* 2011; **7**: 52-56 [PMID: [20721655](https://pubmed.ncbi.nlm.nih.gov/20721655/) DOI: [10.1007/s13181-010-0106-6](https://doi.org/10.1007/s13181-010-0106-6)]
- 23 **Gunja N**. Decontamination and enhanced elimination in sustained-release potassium chloride poisoning. *Emerg Med Australas* 2011; **23**: 769-772 [PMID: [22151677](https://pubmed.ncbi.nlm.nih.gov/22151677/) DOI: [10.1111/j.1742-6723.2011.01469.x](https://doi.org/10.1111/j.1742-6723.2011.01469.x)]
- 24 **Nilsson TS**, Malmgren J, Knudsen K. Parallel haemodialysis and surgery saves a life after massive overdose of potassium pills. *BMJ Case Rep* 2012; **2012** [PMID: [22778452](https://pubmed.ncbi.nlm.nih.gov/22778452/) DOI: [10.1136/bcr.02.2012.5773](https://doi.org/10.1136/bcr.02.2012.5773)]
- 25 **Guillermo PTJ**, Carlos PHJ, Ivonne BAM, Herminio TF, Rubén RP. Extended release potassium salts overdose and endoscopic removal of a pharmacobezoar: A case report. *Toxicol Rep* 2014; **1**: 209-213 [PMID: [28962240](https://pubmed.ncbi.nlm.nih.gov/28962240/) DOI: [10.1016/j.toxrep.2014.04.002](https://doi.org/10.1016/j.toxrep.2014.04.002)]
- 26 **Briggs AL**, Deal LL. Endoscopic removal of pharmacobezoar in case of intentional potassium overdose. *J Emerg Med* 2014; **46**: 351-354 [PMID: [24113476](https://pubmed.ncbi.nlm.nih.gov/24113476/) DOI: [10.1016/j.jemermed.2013.08.031](https://doi.org/10.1016/j.jemermed.2013.08.031)]



Published By Baishideng Publishing Group Inc
7041 Koll Center Parkway, Suite 160, Pleasanton, CA 94566, USA
Telephone: +1-925-3991568
E-mail: bpgoffice@wjgnet.com
Help Desk: <https://www.f6publishing.com/helpdesk>
<https://www.wjgnet.com>

