

CASE REPORT

Varicella zoster virus: a rare cause of acute pancreatitis in an immunocompetent child

Suheelan Kulasegaran,¹ Elizabeth Jane Wilson,² Leon Vasquez,³ Mike Hulme-Moir²

¹Department of General Surgery, Auckland University, Auckland, New Zealand

²Department of General Surgery, North Shore Hospital, Auckland, New Zealand

³North Shore Hospital, Auckland, New Zealand

Correspondence to

Dr Suheelan Kulasegaran, suheelan.kulasegaran@gmail.com

Accepted 25 December 2015

SUMMARY

A 15-year-old girl with a diagnosis of varicella zoster virus (VZV) presented to hospital with severe abdominal pain. This patient was immunocompetent and found to have acute pancreatitis in association with VZV. She responded well to intravenous acyclovir and supportive treatment. A review of the literature for the management of pancreatitis associated with VZV suggests treatment with acyclovir, as it appears to reduce hospital stay and symptoms. The exact benefit is yet to be quantified. Importantly, this diagnosis should be considered in children who have VZV associated with abdominal pain.

BACKGROUND

Primary infection of varicella zoster virus (VZV), commonly known as chicken pox, tends to present with fever and a pruritic rash in childhood.^{1 2} The rash typically starts as itchy red papules, which then progress to become vesicles, later rupturing to form a weeping crust. VZV is highly contagious, it spreads through direct contact or by aerosolised droplets from the ruptured vesicles. Most cases are benign and self-limiting, requiring symptomatic relief only.¹ Complications of VZV are more common in infants, the elderly and in immunocompromised patients. VZV pneumonitis is the most common complication with an incidence of 16–25%.¹ Pancreatitis is a very rare complication of VZV.¹ Over the past few years, there have been an increasing number of reported cases of pancreatitis in childhood. The cause of this trend is likely to be multifactorial and related to an increase in referral and diagnosis. Viral causes of pancreatitis are seen in less than 10% of all cases of pancreatitis.² Of reported viral causes of pancreatitis, VZV pancreatitis is very rare. Only three cases of VZV pancreatitis have been reported in immunocompetent children.^{1–3}

CASE PRESENTATION

A 15-year-old girl presented with sudden onset severe central abdominal pain after eating. She had been in contact with her twin sister, who had developed chickenpox 4 days prior to admission. The patient's medical history comprised of well-controlled asthma. She did not take any regular medications. There was no previous history of alcohol intake or gallstones.

On examination, the patient was found to be afebrile and haemodynamically stable. There was a notable rash on her skin. This rash appeared as crops of raised red vesicles, the majority of which were on her face and torso. Her abdomen was soft,

with no visible distension, but it was tender to light palpation of the epigastrium. There was no guarding or peritonism. On deep palpation, there was no evidence of organomegaly and no palpable masses. No focal neurological deficit was elicited on examination.

INVESTIGATIONS

Laboratory results on admission were as follows: raised serum lipase 1523 U/L and amylase 824 U/L, haemoglobin 148 g/L, white cell count 7.0×10^9 , serum glucose 6.0 mmol/L, serum albumin 44 g/L, adjusted serum calcium 2.45 mmol/L, lactate dehydrogenase 447 U/L, urea 2.8 mmol/L and serum ethanol negative. Arterial blood gas showed PaO₂ 13.6 kPa on room air. Liver function tests were normal.

Further blood tests were carried out to exclude other causes of pancreatitis, all of which were normal. These tests included: fasting lipid studies, tissue autoantibodies, perinuclear and cytoplasmic anti-neutrophil cytoplasmic antibody and extractable nuclear antigen (P-ANCA, C-ANCA and ENA) screening tests, and mononucleosis screen. An abdominal US was performed. The results were unremarkable, with no signs of gallstones, cholecystitis, bile duct dilatation or other structural abnormality to indicate a cause for pancreatitis. A CT scan was not performed in this patient's case as her clinical and biochemical picture supported a diagnosis of uncomplicated acute pancreatitis. In addition to this, there is an inherent risk with ionising radiation exposure. An MRI scan was not performed as it is less readily available than ultrasound, and may have required sedation for completion. An outpatient MRI to rule out congenital problems causing pancreatitis such as pancreatic divisum was considered, however, the decision was made not to perform it, as the diagnosis of varicella pancreatitis was quite clear.

DIFFERENTIAL DIAGNOSIS

This patient fulfilled two out of three criteria for acute pancreatitis as per the ATLANTA criteria. VZV was considered the most likely factor based on her clinical, biochemical profile and US findings. A modified Glasgow score of 0 was calculated, which indicated mild pancreatitis.

A wide range of possible causes of pancreatitis in this age group were considered, such as: medication induced, gallstones, congenital abnormality, alcohol, trauma, haemolytic-uremic syndrome, autoimmune and infection. After the appropriate



CrossMark

To cite: Kulasegaran S, Wilson EJ, Vasquez L, et al. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2015-213581

investigations were made, the only remaining cause of this young girl's pancreatitis was VZV.

TREATMENT

The patient was admitted to the surgical ward for observation in airborne isolation. She remained nil by mouth overnight and was fluid resuscitated with normal saline. Strict fluid monitoring was performed. A 5-day course of intravenous acyclovir was started after discussion with infectious disease clinicians.

OUTCOME AND FOLLOW-UP

The patient responded well to intravenous acyclovir, supportive measures and close monitoring of her clinical and biochemical status. Her abdominal pain settled and she was able to tolerate a full diet. She was discharged after 5 days of hospitalised treatment with no further follow-up required.

DISCUSSION

Viral infections cause up to 10% of cases of acute pancreatitis. Mumps, Coxsackie B, Epstein Barr, rotavirus, rubella, enterovirus and hepatitis A and B, have all been associated with pancreatitis.² The exact mechanism is not clear, however, one proposed mechanism is direct injury to the pancreatic acinar cells as a result of viral inclusion in cells.^{4 5}

The majority of case reports of VZV pancreatitis occurred in immunocompromised adults. There have been three reported cases of VZV pancreatitis in immunocompetent children.¹⁻³ The first case report describing this association was by Kirschner, in 1988.⁴ In this particular case study, the adult patient also developed a pseudocyst and duodenal obstruction in association with VZV pancreatitis, and responded well to conservative management. Another case, reported by Roy *et al*,⁶ described an immunocompetent adult male who developed jaundice, thought to be due to pancreatitis or the virus itself. This patient responded well to acyclovir.⁶ Zhen *et al* reported a case of VZV infection in an immunocompetent adult a week after being diagnosed with herpes zoster-related rash.⁷

There is still a lack validated prospective research detailing the optimal management of acute pancreatitis in the paediatric population. Most, if not all, of the diagnostic and management strategies have been adopted from the adult population. The Atlanta criteria are generally used to diagnose children with pancreatitis. According to this criteria, a diagnosis of acute pancreatitis can be made by meeting two out of three elements: clinical symptoms, including abdominal pain, nausea, vomiting, or back pain; serum levels of pancreatic amylase and/or lipase three times the upper limit of normal; radiographic evidence of AP including pancreatic oedema on ultrasound (US) or CT.⁸

Severity scores are utilised to predict the outcome in acute pancreatitis. However, there is no validated scoring system for acute pancreatitis severity in the paediatric population. Fabre *et al*⁹ retrospectively evaluated the use of commonly used pancreatitis clinical scores in the paediatric population (Ranson, Modified Glasgow and Debanto) as well as the radiological score (Balthazar). The results of this study showed that the severity of acute pancreatitis was best predicted by the Balthazar score, with a sensitivity of 80% and a specificity of 86%, whereas clinical scores had a sensitivity of 55% and a specificity of 85%. Despite the low sensitivities of the clinical scores, it is important to consider the potentially harmful effects of ionising

radiation of CT scans in children.⁹ The management of uncomplicated VZV pancreatitis is supportive. Principles of management include fluid resuscitation and strict fluid monitoring, pain management, nutrition and close monitoring for potential complications of pancreatitis. The use of acyclovir in several cases has demonstrated encouraging results, including ours; nonetheless, this has not been formally evaluated for its use in VZV-induced pancreatitis.^{1 6 10}

To recapitulate, we report a case of acute pancreatitis associated with VZV in an immunocompetent 15-year-old girl. The key issues highlighted in this report include the need to consider acute pancreatitis in those children who develop abdominal pain. In addition to this, this case highlights the need for further research and guidelines around specific management strategies of acute pancreatitis in children.

Learning points

- ▶ Acute pancreatitis should be considered a differential in patients with chickenpox who develop acute abdominal pain.
- ▶ Acute pancreatitis in patients with chickenpox is possible in the immunocompetent child.
- ▶ Intravenous acyclovir has previously been documented in case reports to be a successful treatment option, however, the exact benefit is yet to be determined.

Contributors SK was primarily responsible for discussion, data collection and write up of the overall case report, and for liaison and primary correspondence for all the authors. MH-M was the senior surgeon responsible for patient care and assisted with write up and direction of the discussion. LV was the surgical registrar responsible for retrieval of data, specifically, blood tests and investigations, and assisted with write up. EJW assisted in discussion, case report write up and submission write up.

Competing interests None declared.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

- 1 Kumar S, Jain AP, Pandit AK. Acute pancreatitis: rare complication of chicken pox in an immunocompetent host. *Saudi J Gastroenterol* 2007;13:138–40.
- 2 Torre JA, Martin JJ, Garcia CB, *et al*. Varicella infection as a cause of acute pancreatitis in an immunocompetent child. *Pediatr Infect Dis J* 2000;19:1218–19.
- 3 Franco J, Fernandes R, Oliveira M, *et al*. Acute pancreatitis associated with varicella infection in an immunocompetent child. *J Paediatr Child Health* 2009;45:547–8.
- 4 Bai HX, Lowe ME, Husain SZ. What have we learned about acute pancreatitis in children?. *J Pediatr Gastroenterol Nutr* 2011;52:262–70.
- 5 Kirschner S, Raufman JP. Varicella pancreatitis complicated by pancreatic pseudocyst and duodenal obstruction. *Dig Dis Sci* 1988;33:1192–5.
- 6 Roy P, Maity P, Basu A, *et al*. Acute pancreatitis: complication of chicken pox in an immunocompetent host. *J Assoc Physicians India* 2012;60:54–5.
- 7 Wang Z, Ye J, Han HH. Acute pancreatitis associated with herpes zoster: case report and literature review. *World J Gastroenterol* 2014;20:18053–6.
- 8 Abu-El-Haija M, Lin T, Palermo J. Update to the management of pediatric acute pancreatitis: highlighting areas in need of research. *J Pediatr Gastroenterol Nutr* 2014;58:689–93.
- 9 Fabre A, Petit P, Gaudart J, *et al*. Severity scores in children with acute pancreatitis. *J Pediatr Gastroenterol Nutri* 2012;55:266–7.
- 10 Parenti D, Steinberg W, Kang P. Infectious causes of acute pancreatitis. *Pancreas* 1996;13:356–71.

Copyright 2016 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit <http://group.bmj.com/group/rights-licensing/permissions>.
BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Become a Fellow of BMJ Case Reports today and you can:

- ▶ Submit as many cases as you like
- ▶ Enjoy fast sympathetic peer review and rapid publication of accepted articles
- ▶ Access all the published articles
- ▶ Re-use any of the published material for personal use and teaching without further permission

For information on Institutional Fellowships contact consortiasales@bmjgroup.com

Visit casereports.bmj.com for more articles like this and to become a Fellow