Journal of Inflammation Research

Dovepress
Taylor & Francis Group

Open Access Full Text Article

CASE REPORT

Fatal Acute Intestinal Obstruction with Hemophagocytic Lymphohistiocytosis and Multiple Organ Failure in Adult-Onset Still's Disease: A Rare Case Report

Kun Li[1,*], Xuejia Pan[2,*], Hongyu Guo[3], Saiping Jiang[4], Xueling Fang[1]

[1]Department of Critical Care Medicine, The First Affiliated Hospital, Zhejiang University School of Medicine, Hangzhou, Zhejiang Province, People's Republic of China; [2]Department of Nursing, Hangzhou Xiaoying Community Health Service Center, Hangzhou, Zhejiang Province, People's Republic of China; [3]Department of Radiology, The First Affiliated Hospital, Zhejiang University School of Medicine, Hangzhou, Zhejiang Province, People's Republic of China; [4]Department of Clinical Pharmacy, The First Affiliated Hospital, Zhejiang University School of Medicine, Hangzhou, Zhejiang Province, People's Republic of China

*These authors contributed equally to this work

Correspondence: Xueling Fang, Department of Critical Care Medicine, The First Affiliated Hospital, Zhejiang University School of Medicine, No. 79, Qingchun Road, Shangcheng District, Hangzhou, Zhejiang Province, People's Republic of China, Email xuelingfang@zju.edu.cn; Saiping Jiang, Department of Clinical Pharmacy, The First Affiliated Hospital, Zhejiang University School of Medicine, No. 79, Qingchun Road, Shangcheng District, Hangzhou, Zhejiang Province, People's Republic of China, Email j5145@zju.edu.cn

Background: Adult-onset Still's disease (AOSD) is a systemic autoinflammatory disorder characterized by unpredictable multi-organ involvement. Although gastrointestinal complications are uncommon in AOSD, they can be life-threatening and present significant diagnostic and management challenges.

Case Summary: We report the case of a 68-year-old man with AOSD who developed acute intestinal obstruction, a rare and critical complication. Imaging revealed significant colonic wall thickening, with a maximum thickness of 2.6 cm on contrast-enhanced computed tomography. The clinical status of the patient deteriorated, further complicated by the onset of hemophagocytic lymphohistiocytosis (HLH) and multi-organ failure, including acute renal dysfunction. Despite receiving intensive care and aggressive treatment, including supportive measures and immunosuppressive therapy, the patient succumbed to his illness.

Conclusion: This case underscores the importance of recognizing rare gastrointestinal and systemic complications in patients with AOSD. Early identification and prompt multidisciplinary management of conditions such as HLH and acute intestinal obstruction are essential for improving outcomes in such critical scenarios.

Keywords: acute intestinal obstruction, acute intestinal pseudo-obstruction, adult-onset Still's disease, autoimmune disease, colonic, critical care, hemophagocytic lymphohistiocytosis, macrophage activation syndrome, multiple organ failure, multidisciplinary team (MDT)

Introduction

Adult-onset Still's disease (AOSD) is an uncommon systemic autoimmune inflammatory condition with an unknown cause, thought to result from a complex interplay of genetic predispositions and environmental influences.[1] AOSD was initially characterized by Eric Bywaters in 1970 as an inflammatory condition primarily affecting young adults.[2] It is typically marked by a triad of spiking fever, arthritis, and a salmon-colored skin rash. It closely parallels childhood-onset Still's disease, often referred to as systemic juvenile idiopathic arthritis, which was first documented by George Still in 1897.[3]

Although the precise pathogenic mechanisms underlying AOSD remain unclear, various factors have been proposed to contribute to its etiology. These factors include genetic predispositions such as associations with human leukocyte antigen (HLA) DRB11201, DRB11501, B35, DR2, and DR5; infections caused by viral and bacterial pathogens; and

Received: 8 January 2025
Accepted: 10 April 2025
Published: 16 April 2025

dysregulation of the immune system.[4–7] Several cytokines, including interleukin (IL)-18, IL-1, and IL-6, play critical roles in the pathophysiology of AOSD.[8] Serious complications occur in approximately 15% of patients, including hemophagocytic lymphohistiocytosis (HLH), also referred to as macrophage activation syndrome (MAS), and disseminated intravascular coagulation (DIC), both of which are associated with high mortality rates.[8,9] AOSD primarily affects the joints and is commonly associated with systemic inflammation; however, gastrointestinal (GI) involvement is rare. Cases of concurrent acute intestinal obstruction and HLH are particularly uncommon.

Human cytomegalovirus (CMV) is a ubiquitous double-stranded DNA virus in the β-herpesvirus subfamily.[10] Following initial infection, it establishes latency in poorly differentiated myeloid precursors and can later reactivate, causing recurrences.[11] In immunocompromised patients, CMV infection may lead to severe, life-threatening diseases such as retinitis, encephalitis, pneumonitis, hepatitis, colitis, and radiculopathy, with clinical severity correlating to the degree of immunosuppression.[12,13]

Acute intestinal pseudo-obstruction is defined by a functional blockage of the intestine in the absence of any mechanical cause. It is a relatively rare condition affecting approximately 100 out of every 100,000 hospitalized patients.[14] These complications may result from various conditions, including cardiovascular diseases, neurological disorders (such as myasthenia gravis), inflammatory conditions (such as acute pancreatitis), sepsis, electrolyte imbalances, and endocrinopathies (such as hypothyroidism).[15,16] The mortality rate for acute intestinal pseudo-obstruction is 30%, rising to 45% in 10–20% of patients who develop ischemia and perforation of the colon.[14]

Here, we present a rare case of AOSD complicated by concurrent acute intestinal obstruction and HLH, which ultimately led to multiorgan failure and death. Our present findings reveal that it is critical to raise awareness about these rare complications, ensure timely diagnosis, and provide prompt treatment in the early stages.

Case Presentation

A 68-year-old man arrived at the Emergency Department of The First Affiliated Hospital of Zhejiang University School of Medicine, China, presenting with symptoms of severe abdominal pain, abdominal distension, nausea, vomiting, a decreased appetite, and increased stool frequency (5–8 times daily with loose stools) for the past 3 days. The patient had a one-month history of AOSD, previously manifesting as high fever, polyarthritis, a non-pruritic maculopapular erythematous chest rash, leukocytosis, and elevated ferritin levels (Table 1). A positron emission tomography scan with fluorodeoxyglucose (18F-FDG) revealed mild FDG uptake in multiple small lymph nodes, a diffusely swollen spleen

Table 1 Clinical Characteristics of the Patient

	Reference Range	Feb. 28th	Feb. 29th	Mar. 14th	Mar. 20th	Mar. 27th	Mar. 29th	Mar. 30th	Mar. 31st	Apr. 1st
WBC (10^9/L)	4–10	14.91		21.25		16.56		16.07	10.64	6.59
Neutrophil (10^9/L)	2–7	13.60		19.83		14.56		14.72	9.79	6.10
Lymphocyte (10^9/L)	0.8–4.0	0.69		0.40		1.14		0.40	0.35	0.17
HB (g/L)	113–151	91.00		96.00		129.00		174.00	86.00	76.00
PLT (10^9/L)	101–320	466.00		291.00		246.00		155.00	7.00	22.00
P-ANCA	Negative		Negative							
C-ANCA	Negative		Negative							
Atypical ANCA	Negative		Negative							
HLA-B27	Negative		Negative							
Anti-CCP (U/mL)	0–17		Negative, <8.0							
ASO (IU/mL)	0.0–200.0		159.00							

(*Continued*)

Table 1 (Continued).

	Reference Range	Feb. 28th	Feb. 29th	Mar. 14th	Mar. 20th	Mar. 27th	Mar. 29th	Mar. 30th	Mar. 31st	Apr. 1st
RF (IU/mL)	0.0–20.0		Negative, <8.7							
ANA	Negative		Negative							
Anti-dsDNA	Negative		Negative							
MPO (RU/mL)	0–20		2.62							
PR3 (RU/mL)	0–20		2.74							
CRP (mg/L)	0.00–8.00		47.60	7.15	1.79	9.22	7.25	9.70	10.05	5.00
ESR (mm/h)	0–15		110.00	44.00						
Stool culture							Normal intestinal flora			
Blood culture	Negative	Negative							Negative	Negative
CK-MB (U/L)	2–25		8.00	23.00		26.00			115.00	340.00
CK (U/L)	50–310		28.00	33.00		30.00			122.00	502.00
Hs-cTn (ng/mL)	0.000–0.034		0.00			0.00		0.02	5.14	6.52
CEA (ng/mL)	0.0–5.0		3.20							
CA 19–9 (U/mL)	0.0–37.0		2.90							
CA 125 (U/mL)	0.0–35.0		25.70							
AFP (ng/mL)	0.0–20.0		5.00							
Ferritin (ng/mL)	7.0–323.0		4297.70	4617.80	6182.70	5672.20				66739.80
Ammonia (μmol/L)	9–30								56.00	88.40
β-1,3-D-glucan (pg/mL)	1–60									165.27
CsA 0h (ng/mL)					30.40	63.30				
IL-2 (pg/mL)	0–5.71		0.89				1.80			0.10
IL-4 (pg/mL)	0–3.00		2.42				1.59			0.10
IL-5 (pg/mL)	0–3.10		0.41				0.10			0.11
IL-6 (pg/mL)	0–5.30		12.54				5.88			945.52
IL-8 (pg/mL)	0–20.6		16.81				224.00			2931.53
IL-1β (pg/mL)	0–12.40		0.37				3.97			0.47
IL-10 (pg/mL)	0–4.91		4.23				10.84			1513.45
IL-17A (pg/mL)	0–20.6		3.28				2.30			0.10
TNF-α (pg/mL)	0–4.60		3.82				2.71			0.10
IFN-α (pg/mL)	0–8.50		1.15				2.17			0.13
IFN-γ (pg/mL)	0–7.42		11.48				3.98			5.86
Triglyceride (mmol/L)	0.30–1.70		0.98	1.79						1.48
TC (mmol/L)	3.14–5.86		3.02	4.66						2.28
HDL-C (mmol/L)	0.78–1.81		0.95	1.40						0.58

(*Continued*)

https://doi.org/10.2147/JIR.S509898

Table 1 (Continued).

	Reference Range	Feb. 28th	Feb. 29th	Mar. 14th	Mar. 20th	Mar. 27th	Mar. 29th	Mar. 30th	Mar. 31st	Apr. 1st
LDL-C (mmol/L)	1.31–3.29		1.58	2.22						1.25
VLDL-C (mmol/L)	0.31–1.25		0.49	1.04						0.45
HbA1c (%)	4.2–6.2									6.30
Ig A (mg/dL)	100.0–420.0		245.00				82.00			80.60
Ig M (mg/dL)	50.0–280.0		65.00				40.00			29.90
Ig G (mg/dL)	860.0–1740.0		1612.00				624.00			469.00
Complement-3 (mg/dL)	70.0–140.0		143.00				93.00			21.60
Complement-4 (mg/dL)	10.0–40.0		35.00				25.00			6.40
K (mmol/L)	3.50–5.30		4.64					5.70	4.70	4.87
PCT (ng/mL)	0–0.5	0.13					0.23	1.53		1.82
T. BIL (μmol/L)	0.0–21.0		4.70	5.40		10.50		10.20	13.20	41.50
D. BIL (μmol/L)	0.0–8.0		2.20	2.40		3.80		3.80	6.10	23.00
TBA (μmol/L)	0–10		2.50	10.20		6.60		2.70	29.70	69.80
ALT (U/L)	7–40		24.00	6.00		7.00		10.00	174.00	4011.00
AST (U/L)	13–35		26.00	11.00		12.00		23.00	230.00	17054.00
GGT (U/L)	7–45		25.00	19.00		22.00		23.00	27.00	76.00
LDH (U/L)	120–250		293.00	244.00		237.00		262.00	464.00	17054.00
AKP (U/L)	50.0–135.0		89.00	81.00		74.00		84.00	70.00	140.00
ALB (g/L)	40.0–55.0		32.10	29.80		35.90		25.80	23.08	32.60
Globulin (g/L)	20.0–40.0		31.80	25.00		23.10		19.90	19.60	11.90
GLU (mmol/L)	3.90–6.10		4.47	4.26					12.40	6.80
BUN (mmol/L)	3.00–8.80		4.37	8.67		8.38		20.07	24.90	14.58
Cr (μmol/L)	41–81		71.00	80.00		90.00		247.00	380.00	254.00
BNP (pg/mL)	0–155								13.00	214.00
PT (S)	10–13.5	14.80		11.10		10.40		10.60	22.00	34.40
APTT (S)	23.9–33.5	31.60		24.30		22.60		28.10	64.60	37.30
D-dimer (ug/L FEU)	0–700	1735.00		1083.00		3892.00		10239.00	23430.00	37450.00
Fib (g/L)	2.0–4.0	5.14		1.92		2.74		2.39	0.90	0.98
CMV	0–200	Negative				5.13×10^2				
EBV	0–500					6.80×10^2				
$CD4^+/CD8^+$	0.71–2.78						1.28			
$CD3^+,CD4^+$ (cells/μL)	550–1440						106.00			
$CD3^+,CD8^+$ (cells/μL)	320–1250						85.00			
$CD19^+$ (cells/μL)	90–560						33.00			
NK (cells/μL)	150–1100						33.00			

(*Continued*)

Table 1 (Continued).

	Reference Range	Feb. 28th	Feb. 29th	Mar. 14th	Mar. 20th	Mar. 27th	Mar. 29th	Mar. 30th	Mar. 31st	Apr. 1st
$CD4^+CD8^+$							1.00			
$CD3^+$	955–2860						194.00			
$CD45^+$	1530–3700						266.00			

Abbreviations: AKP, alkaline phosphatase; AFP, Alpha-fetoprotein; ALT, alanine aminotransferase; Ammonia, plasma ammonia; Anti-CCP, anti-cyclic citrullinated peptide antibody; ASO, antistreptolysin O; ANA, Antinuclear antibody IgG type; Anti-dsDNA, anti-double-stranded DNA antibody, IgG type; APTT, activated partial thromboplastin time; AST, aspartate aminotransferase; BNP, B-type natriuretic peptide; CA 19–9, carbohydrate antigen 19–9; CA 125, carbohydrate antigen 125; CEA, carcinoembryonic antigen; CD19+, absolute B lymphocyte count; CD3+ CD4+, absolute count of helper/inducer T lymphocytes; CD3+ CD8+, absolute count of suppressor/cytotoxic T lymphocytes; CD3+, absolute T lymphocyte count; CD4+/CD8+, absolute count of CD4+CD8+ double-positive T lymphocytes; CD4+/CD8+, helper/suppressor T lymphocyte ratio; CD45+, absolute lymphocyte count; CMV, quantitative cytomegalovirus (CMV) DNA testing; Cr, creatinine; CRP, C-reactive protein; CsA 0 h, cyclosporine A trough concentration; D. BIL, direct bilirubin; D-dimer, plasma D-dimer; EBV, quantitative Epstein-Barr virus (EBV) DNA testing; Fib, fibrinogen; GGT, gamma-glutamyl transpeptidase; GLU, serum glucose; HB, hemoglobin; HbA1c, serum glycated hemoglobin A1c; HDL-C, high-density lipoprotein cholesterol; Hs-cTn, high-sensitivity cardiac troponin; IFN, interferon; Ig, immunoglobulin; IL, interleukin; K, serum potassium; LAC, whole blood lactic acid; LDH, lactate dehydrogenase; LDL-C, low-density lipoprotein cholesterol; LPS, lipase; MPO, anti-myeloperoxidase antibody; NK, natural killer; PCT, procalcitonin; PLT, platelet; PR3, anti-proteinase 3 antibody; PT, prothrombin time; RF, Rheumatoid factor; T. BIL, total bilirubin; TBA, total bile acid; TC, total cholesterol; TNF-α, tumor necrosis factor-α; VLDL-C, very low-density lipoprotein cholesterol; WBC, white blood cell; β-hydroxybutyric acid, serum β-hydroxybutyric acid.

with mildly increased FDG metabolism, and diffuse FDG uptake in the bone marrow, including the spine, pelvis, and sternum (Figure 1A). Subsequent bone marrow cytology showed no abnormalities in the proportion or morphology of mature lymphocytes; however, the proportion of plasma cells was elevated (Figure 1B). Despite treatment with corticosteroids, nonsteroidal anti-inflammatory drugs (NSAIDs), and cyclosporine, the symptoms of the patient showed only slight improvement.

Three days prior to admission, his abdominal symptoms had worsened progressively, prompting his visit to the emergency department. He was admitted to the rheumatology department with a provisional diagnosis of AOSD.[17,18] At the time of AOSD diagnosis, malignancies and other rheumatic diseases were systematically excluded through appropriate testing. He had no history of hypertension, diabetes, heart disease, kidney disease, or other chronic conditions. The patient denied any personal or family history of chronic inflammatory bowel disease or prior abdominal surgery. Additionally, he and his family denied a history of hepatitis, tuberculosis, influenza, or other infectious diseases.

Initial Evaluations and Imaging Findings

On admission, the patient appeared acutely ill, presenting with abdominal distension, tenderness, and reduced bowel sounds. His vital signs were as follows: temperature, 36.8°C; pulse, 89 beats per minute; respiratory rate, 18 breaths per minute; and blood pressure, 131/98 mmHg. Laboratory test results showed leukocytosis (white blood cell count: 16.56×10^9/L, neutrophils: 87.9%, and lymphocytes: 6.9%); hemoglobin levels, 129 g/L; platelet count, 246×10^9/L; C-reactive protein levels, 9.22 mg/L; and erythrocyte sedimentation rate, 8 mm/h, suggesting an inflammatory response. Liver and kidney function test results were within normal limits (albumin 35.9 g/L, alanine aminotransferase (ALT) 7 U/L, aspartate aminotransferase (AST) 12 U/L, creatinine 90 μmol/L, and urea 8.38 mmol/L). Serum ferritin levels were markedly elevated (5672.2 ng/mL), and CMV DNA was detected (5.13×10^2 IU/mL). Echocardiography showed impaired left ventricular diastolic function but normal systolic function (ejection fraction: 55%). The cyclosporine trough concentration was 63.30 ng/mL (within normal range). Stool bacterial culture and identification revealed normal gut flora. The clinical indicators of the patient during hospitalization are presented in Table 1.

An abdominal computed tomography (CT) scan with contrast enhancement performed on the second day of admission revealed significant thickening and dilation of the entire colon, with wall thickness measuring up to 1.7 cm, accompanied by abdominal and pelvic effusions (Figure 1D). The thickened bowel segments exhibited marked proximal dilation, indicating acute intestinal obstruction without any evidence of perforation.

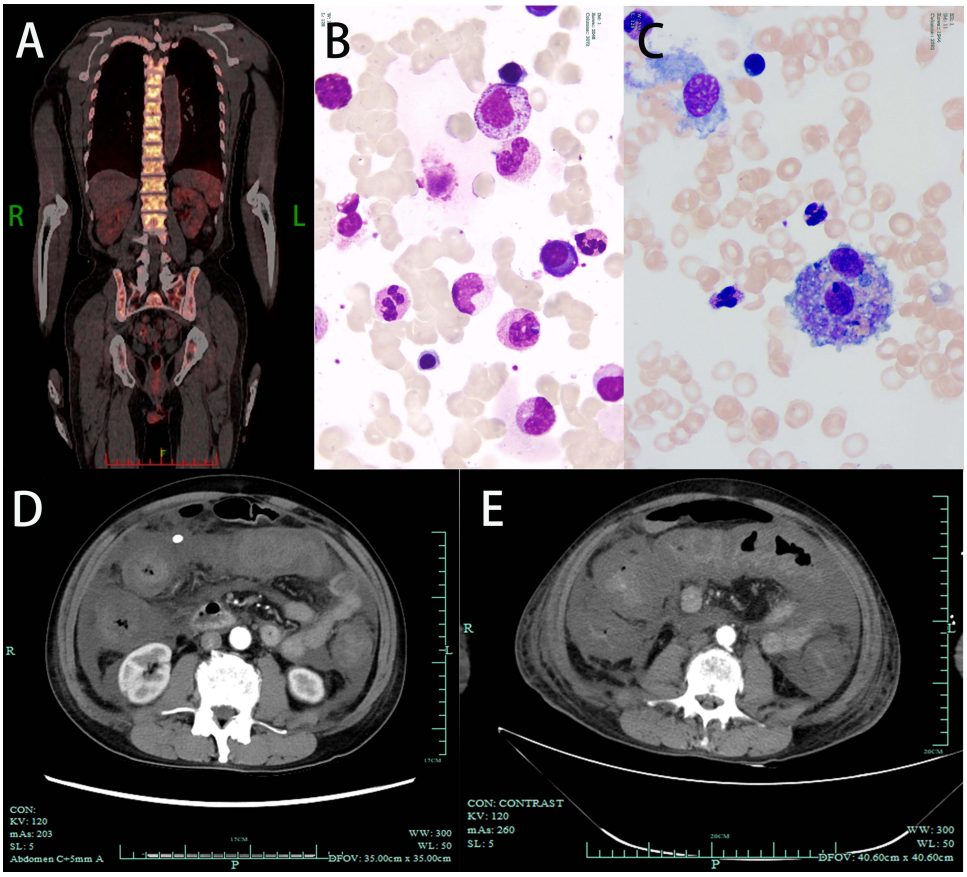

Figure 1 Imaging findings from radiologic and bone marrow examinations of the patient during the hospital stay. (**A**) Fluorodeoxyglucose (18F-FDG) positron emission tomography (PET) imaging revealed mild FDG uptake in multiple small lymph nodes, a diffusely swollen spleen with mildly increased FDG metabolism compared to the liver, and diffuse FDG uptake in the bone marrow, including the spine, pelvis, and sternum. (**B**) Bone marrow cytology revealed no abnormalities in the proportion or morphology of mature lymphocytes. However, the proportion of plasma cells was elevated. (**C**) Bone marrow cytology revealed a reduced proportion of mature lymphocytes with no observable morphological abnormalities. Monocytoid reticular cells accounted for 5% of the cell population, while phagocytic reticular cells, identified by their engulfment of erythrocytes and platelets, constituted 2% of the cell population. (**D**) Abdominal computed tomography (CT) with contrast enhancement revealed marked edema and thickening of the colonic and rectal walls, with a maximum wall thickness of 1.7 cm. Abdominal and pelvic effusion, along with significant ascites, was evident. (**E**) Abdominal CT with contrast enhancement showed pronounced edema and thickening of the colonic and rectal walls, with a maximum thickness of 2.6 cm. Abdominal and pelvic effusion, accompanied by substantial ascites, was observed. The splenic artery and superior mesenteric artery were notably slender.

Management and Clinical Course

Given the severity of the condition and suspected acute intestinal obstruction, consultations were sought with gastroenterology and surgery teams. Initial management included methylprednisolone, cefoperazone-sulbactam, bowel rest, nasogastric decompression, intravenous fluids, parenteral nutrition, and somatostatin infusion (3 mg q12 h via continuous pump). Antiviral therapy with ganciclovir was initiated for CMV infection. Despite these interventions, the clinical response was minimal.

On the fourth day of admission, the patient experienced worsening abdominal pain, primarily epigastric and paroxysmal in nature, along with several episodes of green, watery diarrhea. Examination revealed abdominal tenderness without rebound tenderness and hyper-resonance on percussion. Over the next few hours, he developed signs of septic shock, including profound hypotension (blood pressure, 60/40 mmHg) requiring vasopressors.

Repeat laboratory test results revealed worsening metabolic acidosis (pH 7.18, BE −21.4 mmol/L), hyperlactatemia (8.4 mmol/L), thrombocytopenia (platelet count 12×10^9/L), and rapid elevation of liver enzymes (ALT 4011 U/L and AST 17,054 U/L). Blood cultures were collected, and subsequent results were negative (Table 1). Repeat CT showed further thickening of the colonic wall (up to 2.6 cm), worsening ascites, and pleural effusion (Figure 1E).

Given the limited effectiveness of conventional treatments, the complexity of the condition of the patient, and its rapid deterioration, a multidisciplinary team (MDT) approach to diagnosis and treatment was adopted. Radiology experts

reviewed consecutive imaging studies and identified a diffuse colonic edema and blood vessel irregularities (narrowing of splenic and superior mesenteric arteries), raising suspicions of systemic vasculitis or thrombotic complications. However, given the enhancement of the intestinal mucosa, gastroenterologists and surgeons unanimously agreed that there were no radiological signs of perforation or mesenteric ischemia, and thus no indication for surgical intervention. They considered the significant colonic edema to be related to inflammation caused by AOSD. Hematology experts expressed concerns about HLH/MAS due to the rapid clinical deterioration, elevated ferritin levels, and cytopenia.

Further tests confirmed MAS, indicated by natural killer (NK) cell activity of <15%, a soluble CD25 level of 3623.15 pg/mL, and evidence of hemophagocytosis observed via bone marrow cytology (Figure 1C).[19] The results of screening blood via next-generation sequencing[20] for bloodstream infection were negative.

Clinical Outcomes

Despite aggressive management, including high-dose methylprednisolone (40 mg q12h), carbapenem antibiotics (imipenem-cilastatin 0.5 g q6h), plasma transfusion, hepatoprotective therapy, and continuous renal replacement therapy (CRRT), the condition of the patient deteriorated rapidly. He developed refractory shock, severe metabolic acidosis, and multiple organ failure. Respiratory function worsened with declining oxygenation indices. Although a higher dose of methylprednisolone, further use of the IL-6 inhibitor, and invasive mechanical ventilation were recommended, his family declined these interventions, opting only for high-flow nasal oxygen therapy.

On the sixth day of admission, the family decided to discontinue treatment, and the patient was discharged against medical advice. He passed away shortly after leaving the hospital.

Discussion

AOSD is a disease defined by uncontrolled inflammation, leading to the activation of a cytokine storm.[21] Abdominal pain is a common manifestation among the many systemic symptoms of AOSD, with its reported frequency ranging widely between 1% and 48%.[22]

We managed an elderly male patient with a rare presentation of AOSD, complicated by acute intestinal pseudo-obstruction, hemophagocytic syndrome, refractory shock, and multiple organ failure. Following the onset of acute intestinal pseudo-obstruction and hemophagocytic syndrome, the patient rapidly developed severe shock and multiple organ failure, ultimately resulting in his death.

Ogilvie syndrome, first described in 1948 by William Heneage Ogilvie, is an acute condition characterized by intestinal pseudo-obstruction. An imbalance between sympathetic and parasympathetic nerve activity is believed to contribute to its development, providing potential insights into its pathogenesis.[23] Several pathogenic mechanisms, such as interstitial cells of Cajal dysfunction, abnormalities in the enteric nervous system, and disruptions in autonomic balance, may contribute to the development of acute intestinal pseudo-obstruction.[14] In critically ill patients, conditions such as severe sepsis, shock, and postoperative states are linked to an elevated risk of developing intestinal pseudo-obstruction, likely mediated by cytokine activity.[14,24] Acute colonic pseudo-obstruction has been associated with several viral infections, including herpes zoster, cytomegalovirus (CMV), and severe dengue.[25–28] In immunocompromised patients with AOSD who develop intestinal inflammation, these viral infections should be considered as potential etiologies. Our patient initially tested negative for CMV DNA upon admission, but a subsequent test was positive, suggesting CMV reactivation. Antiviral therapy was initiated immediately, and follow-up NGS testing no longer detected CMV infection. Thus, the likelihood of CMV-induced colitis in this patient was considered low, although it could not be entirely excluded, as diagnosis typically relies on biopsy. Colonic mucosal biopsies stained with hematoxylin and eosin may reveal characteristic "owl eye" inclusion bodies, which are highly specific for CMV. Notably, immunohistochemistry, which has higher sensitivity, is the gold standard for diagnosing CMV colitis.[26,29] In this case, an endoscopic biopsy was not performed due to the patient's rapid clinical deterioration and the family's refusal of further diagnostic and therapeutic interventions, which represents a limitation of this study.

Only a small number of cases involving AOSD complicated by pseudo-obstruction have been documented in the literature.[30–33] Additionally, a recent case report highlighted duodenojejunal inflammation as a cause of chronic vomiting,[34] suggesting the need for further investigation into gastrointestinal involvement in AOSD. Cytokines play

a role in the autonomic regulation of both sympathetic and parasympathetic nerves, and hypercytokinemia in patients with acute conditions may lead to intestinal pseudo-obstruction via alterations in autonomic nerve responses.[35] Previous studies have indicated that AOSD may impact sympathetic bowel tone and disrupt the autonomic enteric nervous system, resulting in colonic distension.[33] However, AOSD is marked by elevated levels of pro-inflammatory cytokines, including IL-18, IL-1, IL-6, interferon (IFN)-α, and IFN-γ, which are crucial in the pathophysiology of the disease.[8] Notably, IL-18 levels that are particularly elevated in patients with AOSD[36] may contribute as well. Given that Crohn's disease is also associated with elevated IL-18 levels and abdominal symptoms, shared mechanisms may underlie these conditions, including mucosal inflammation and disruption of the intestinal barrier, potentially contributing to gastrointestinal complications in AOSD.[37] Further, AOSD can cause multiple enteric adenopathies, potentially exacerbating bowel motility impairment.[38] Amyloidosis should be considered a potential differential diagnosis in cases of intestinal pseudo-obstruction in patients with AOSD.[31,39] AOSD can lead to intestinal pseudo-obstruction in both acute and chronic stages, particularly when amyloidosis is a complicating factor.

Pseudo-obstruction can occur as a complication of several diseases, particularly acute conditions.[14] After ruling out mechanical obstruction, it is crucial to assess the possibility of ischemia and perforation, as these complications may require surgical intervention.[40] Our patient experienced rapid clinical deterioration and severe shock; hence, we immediately considered these possibilities. However, contrast-enhanced abdominal CT revealed no evidence of intestinal blood flow obstruction or mechanical blockage, thereby excluding the possibility of bowel necrosis or perforation. The significant colonic wall thickening observed in this patient, reaching up to 2.6 cm as measured via CT imaging, indicated a severe inflammatory process affecting the gastrointestinal tract, which is very rare in AOSD. Through the MDT approach, it was determined that the intestinal obstruction could be related to diffuse vasculitis, a common complication of AOSD. Based on this diagnosis, we modified the treatment direction and implemented a conservative management strategy. This included anti-shock therapy, administration of methylprednisolone, fasting, gastrointestinal decompression, and comprehensive measures such as CRRT.

In retrospect, earlier and more aggressive immunosuppressive therapy may have improved the outcome for our patient. The presence of hemophagocytic activity in the bone marrow biopsy confirmed the diagnosis of HLH,[41] but the critical condition of the patient precluded any meaningful therapeutic response. The most severe complication of AOSD is secondary HLH, which has an estimated prevalence of 10–15% and is associated with a high mortality rate.[42] HLH is a systemic immune hyperactivation syndrome. When HLH is associated with a rheumatologic disorder, it is referred to as MAS. Although the precise pathogenic pathways remain unclear, reduced NK cell activity, elevated soluble interleukin-2 receptor levels, and excessive cytokine production are thought to play a role in the pathogenesis of both AOSD and MAS.[22,43] Due to its complexity, HLH/MAS is often difficult to differentiate from sepsis and other conditions causing systemic inflammation. MAS can progress to multiple organ failure and, ultimately, result in a fatal outcome.[44] Consequently, we initially administered aggressive antimicrobial therapy and corticosteroids.

The various treatment approaches for AOSD are tailored to the clinical presentation. NSAIDs and glucocorticoids are typically employed. In cases of HLH/MAS, hyperferritinemia, or liver involvement, IL-1 inhibitors, IL-6 receptor inhibitors such as tocilizumab, and JAK inhibitors like tofacitinib and baricitinib have proven effective.[19,45–48] Intravenous immunoglobulins, administered at doses ranging from 0.4 g/kg to 2 g/kg of body weight for 2–5 days per month, have shown potential efficacy.[49] Additionally, abatacept has been utilized in some cases of AOSD,[50] and the IL-17 inhibitor is still under preliminary investigation.[44] In the present case, the patient's family declined further treatment, which precluded the escalation of methylprednisolone and the continued use of IL-6 inhibitors.

Management of AOSD, especially when complicated by HLH and gastrointestinal involvement, remains a challenge. This case serves as a reminder that HLH should be considered in AOSD patients who present with systemic inflammation, multiple organ dysfunction, and rapid clinical deterioration. Early identification of HLH and timely initiation of appropriate treatment protocols, such as etoposide-based regimens or biologic therapies targeting cytokines such as IL-1 or IL-6, may improve outcomes in similar cases.[48] The timing and selection of empiric immunosuppressive therapy remain significant challenges in the management of suspected HLH/MAS, particularly in patients who are critically ill, due to the persistent concern for underlying infections. These decisions rely heavily on individual patient factors and clinician expertise. In the present case, despite intensive treatment, the condition of the patient deteriorated rapidly,

culminating in multiple organ failure shortly after admission to the intensive care unit. This case underscores the critical importance of early recognition and timely intervention in such scenarios. The swift progression of the clinical course of the disease also highlights the necessity for further research into the underlying pathophysiology of these severe complications associated with AOSD.

Conclusion

In summary, the present case highlights the rare yet severe complication of acute intestinal obstruction and HLH in patients with AOSD. Clinicians should maintain a high index of suspicion when encountering patients with AOSD presenting with gastrointestinal symptoms or systemic decline. A prompt diagnosis and timely, aggressive treatment is essential for improving outcomes in patients experiencing such complex and life-threatening manifestations of AOSD.

Ethical Approval

This study was approved by the Clinical Research Ethics Committee of The First Affiliated Hospital of Zhejiang University School of Medicine, China (Ethical Approval Number: 2024-1528). The procedures followed in this study adhered to the principles outlined in the Declaration of Helsinki.

Consent Statement

Consent for data collection and publication of this report was obtained from the next of kin of the patient after his demise. The next of kin were informed that patient data would be used solely for the purpose of academic research.

Acknowledgments

We are grateful for the support provided by various colleagues from the Department of Critical Care Medicine, The First Affiliated Hospital, Zhejiang University School of Medicine, Hangzhou, China, for this study.

Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

Funding

This study was supported by the General Scientific Research Project of the Zhejiang Provincial Department of Education (Grant Number: Y201941857).

Disclosure

The authors declare that they have no competing financial interests or personal relationships that may have influenced the work reported in this study.

References

1. Martini A, Ravelli A, Avcin T, et al. Toward new classification criteria for juvenile idiopathic arthritis: first steps, pediatric rheumatology international trials organization international consensus. *J Rheumatol*. 2019;46(2):190–197. doi:10.3899/jrheum.180168
2. Bywaters EG. Still's disease in the adult. *Ann Rheum Dis*. 1971;30(2):121–133. doi:10.1136/ard.30.2.121
3. Still GF. On a form of chronic joint disease in children. *Med Chir Trans*. 1897;80(1):47–60. doi:10.1177/095952879708000106
4. Wouters JM, Reekers P, van de Putte LB. Adult-onset Still's disease. Disease course and HLA associations. *Arthritis Rheum*. 1986;29(3):415–418. doi:10.1002/art.1780290316
5. Wouters JM, van de Putte LB. Adult-onset Still's disease; clinical and laboratory features, treatment and progress of 45 cases. *Q J Med*. 1986;61 (235):1055–1065.
6. Pouchot J, Sampalis JS, Beaudet F, et al. Adult Still's disease: manifestations, disease course, and outcome in 62 patients. *Medicine*. 1991;70 (2):118–136. doi:10.1097/00005792-199103000-00004

7. Joung CI, Lee HS, Lee SW, et al. Association between HLA-DR B1 and clinical features of adult onset Still's disease in Korea. *Clin Exp Rheumatol*. 2003;21(4):489–492.
8. Asanuma YF, Mimura T, Tsuboi H, et al. Nationwide epidemiological survey of 169 patients with adult Still's disease in Japan. *Mod Rheumatol*. 2015;25(3):393–400. doi:10.3109/14397595.2014.974881
9. Behrens EM, Koretzky GA. Review: cytokine storm syndrome: looking toward the precision medicine era. *Arthritis Rheumatol*. 2017;69 (6):1135–1143. doi:10.1002/art.40071
10. Stern-Ginossar N, Weisburd B, Michalski A, et al. Decoding human cytomegalovirus. *Science*. 2012;338(6110):1088–1093. doi:10.1126/science.1227919
11. Shnayder M, Nachshon A, Krishna B, et al. Defining the transcriptional landscape during cytomegalovirus latency with single-cell RNA sequencing. *mBio*. 2018;9(2). doi:10.1128/mBio.00013-18
12. Gugliesi F, Pasquero S, Griffante G, et al. Human cytomegalovirus and autoimmune diseases: where are we? *Viruses*. 2021;13(2). doi:10.3390/v13020260
13. Cohen JI. Therapeutic vaccines for herpesviruses. *J Clin Investig*. 2024;134(9). doi:10.1172/jci179483
14. Wells CI, O'Grady G, Bissett IP. Acute colonic pseudo-obstruction: a systematic review of aetiology and mechanisms. *World J Gastroenterol*. 2017;23(30):5634–5644. doi:10.3748/wjg.v23.i30.5634
15. De Giorgio R, Knowles CH. Acute colonic pseudo-obstruction. *Br J Surg*. 2009;96(3):229–239. doi:10.1002/bjs.6480
16. Viallard JF, Vincent A, Moreau JF, Parrens M, Pellegrin JL, Ellie E. Thymoma-associated neuromyotonia with antibodies against voltage-gated potassium channels presenting as chronic intestinal pseudo-obstruction. *Eur Neurol*. 2005;53(2):60–63. doi:10.1159/000084300
17. Yamaguchi M, Ohta A, Tsunematsu T, et al. Preliminary criteria for classification of adult Still's disease. *J Rheumatol*. 1992;19(3):424–430.
18. Efthimiou P, Kontzias A, Hur P, Rodha K, Ramakrishna GS, Nakasato P. Adult-onset Still's disease in focus: clinical manifestations, diagnosis, treatment, and unmet needs in the era of targeted therapies. *Semin Arthritis Rheum*. 2021;51(4):858–874. doi:10.1016/j.semarthrit.2021.06.004
19. Shakoory B, Geerlinks A, Wilejto M, et al. The 2022 EULAR/ACR points to consider at the early stages of diagnosis and management of suspected haemophagocytic lymphohistiocytosis/macrophage activation syndrome (HLH/MAS). *Ann Rheumatic Dis*. 2023;82(10):1271–1285. doi:10.1136/ard-2023-224123
20. Han D, Yu F, Zhang D, et al. The real-world clinical impact of plasma mNGS testing: an observational study. *Microbiol Spectr*. 2023;11(2): e0398322. doi:10.1128/spectrum.03983-22
21. Tomaras S, Goetzke CC, Kallinich T, Feist E. Adult-onset Still's disease: clinical aspects and therapeutic approach. *J Clin Med*. 2021;10(4):733. doi:10.3390/jcm10040733
22. Gerfaud-Valentin M, Jamilloux Y, Iwaz J, Seve P. Adult-onset Still's disease. *Autoimmun Rev*. 2014;13(7):708–722. doi:10.1016/j.autrev.2014.01.058
23. Ogilvie H. Large-intestine colic due to sympathetic deprivation; a new clinical syndrome. *Br Med J*. 1948;2(4579):671–673. doi:10.1136/bmj.2.4579.671
24. Vazquez-Sandoval A, Ghamande S, Surani S. Critically ill patients and gut motility: are we addressing it? *World J Gastrointest Pharmacol Ther*. 2017;8(3):174–179. doi:10.4292/wjgpt.v8.i3.174
25. Masood I, Majid Z, Rind W, Zia A, Riaz H, Raza S. Herpes Zoster-induced Ogilvie's syndrome. *Case Rep Surg*. 2015;2015:1–4. doi:10.1155/2015/563659
26. Surapaneni BK, Priyadarshni S, Choksi V, Sorathia S, Kasmin F. A rare case of cytomegalovirus in the gut in an immunocompetent host with ischemic colitis. *Cureus*. 2020. doi:10.7759/cureus.9432
27. Shapiro AM, Bain VG, Preiksaitis JK, Ma MM, Issa S, Kneteman NM. Ogilvie's syndrome associated with acute cytomegaloviral infection after liver transplantation. *Transpl Int*. 2000;13(1):41–45. doi:10.1007/s001470050006
28. Anam AM, Rabbani R. Ogilvie's syndrome in severe dengue. *Lancet*. 2013;381(9867):698. doi:10.1016/S0140-6736(12)62031-5
29. Azer SA, Limaiem F. Cytomegalovirus Colitis. *StatPearls*. 2025.
30. Reginato AJ, Schumacher HR, Baker DG, O'Connor CR, Ferreiros J. Adult onset Still's disease: experience in 23 patients and literature review with emphasis on organ failure. *Semin Arthritis Rheum*. 1987;17(1):39–57. doi:10.1016/0049-0172(87)90015-1
31. Shinohara T, Hidaka T, Matsuki Y, Suzuki K, Ohsuzu F. Calcinosis cutis and intestinal pseudoobstruction in a patient with adult onset Still's disease associated with recurrent relapses of disordered coagulopathy. *Intern Med*. 1999;38(6):516–520. doi:10.2169/internalmedicine.38.516
32. El Younsi S, Perlemuter G, Clerc D, Buffet C, Pelletier G. Maladie de Still et pseudo-obstruction intestinale. [Still's disease and intestinal pseudo-obstruction]. *Gastroenterol Clin Biol*. 2004;28(3):309–310. doi:10.1016/s0399-8320(04)94925-1
33. Hori H, Yabe H, Fukuchi T, Sugawara H. A woman with adult-onset Still's disease and acute intestinal pseudo-obstruction. *Clin Case Rep*. 2021;9 (1):153–157. doi:10.1002/ccr3.3488
34. Manzotti C, Castellani M, Murgo A, Basilisco G. Duodenojejunal inflammation causing chronic vomiting in adult-onset Still's disease. *BMJ Case Rep*. 2023;16(2):e252345. doi:10.1136/bcr-2022-252345
35. Kenney MJ, Ganta CK. Autonomic nervous system and immune system interactions. *Compr Physiol*. 2014;4:1177–1200. doi:10.1002/cphy.c130051
36. Jamilloux Y, Gerfaud-Valentin M, Martinon F, Belot A, Henry T, Seve P. Pathogenesis of adult-onset Still's disease: new insights from the juvenile counterpart. *Immunol Res*. 2015;61(1–2):53–62. doi:10.1007/s12026-014-8561-9
37. Kaplanski G. Interleukin-18: biological properties and role in disease pathogenesis. *Immunol Rev*. 2018;281(1):138–153. doi:10.1111/imr.12616
38. Fautrel B. Adult-onset Still disease. *Best Pract Res Clin Rheumatol*. 2008;22(5):773–792. doi:10.1016/j.berh.2008.08.006
39. Harrington TM, Moran JJ, Davis DE. Amyloidosis in adult onset Still's disease. *J Rheumatol*. 1981;8(5):833–836.
40. Robinson AJ, Quigley JP, Banks A, Farmer M. Ogilvie's syndrome treated with an emergency laparotomy, right hemicolectomy and end ileostomy. *BMJ Case Rep*. 2017;2017. doi:10.1136/bcr-2017-220916
41. Bergsten E, Horne A, Arico M, et al. Confirmed efficacy of etoposide and dexamethasone in HLH treatment: long-term results of the cooperative HLH-2004 study. *Blood*. 2017;130(25):2728–2738. doi:10.1182/blood-2017-06-788349
42. Hot A, Toh ML, Coppere B, et al. Reactive hemophagocytic syndrome in adult-onset Still disease: clinical features and long-term outcome: a case-control study of 8 patients. *Medicine*. 2010;89(1):37–46. doi:10.1097/MD.0b013e3181caf100

43. Giacomelli R, Ruscitti P, Shoenfeld Y. A comprehensive review on adult onset Still's disease. *J Autoimmun*. 2018;93:24–36. doi:10.1016/j.jaut.2018.07.018
44. Kessel C, Lippitz K, Weinhage T, et al. Proinflammatory cytokine environments can drive Interleukin-17 overexpression by gamma/delta T cells in systemic juvenile idiopathic arthritis. *Arthritis Rheumatol*. 2017;69(7):1480–1494. doi:10.1002/art.40099
45. Honda M, Moriyama M, Kondo M, Kumakura S, Murakawa Y. Tofacitinib-induced remission in refractory adult-onset Still's disease complicated by macrophage activation syndrome. *Scand J Rheumatol*. 2020;49(4):336–338. doi:10.1080/03009742.2020.1729405
46. Kacar M, Fitton J, Gough AK, Buch MH, McGonagle DG, Savic S. Mixed results with baricitinib in biological-resistant adult-onset Still's disease and undifferentiated systemic autoinflammatory disease. *RMD Open*. 2020;6(2):e001246. doi:10.1136/rmdopen-2020-001246
47. Ma Y, Wu M, Zhang X, et al. Efficacy and safety of tocilizumab with inhibition of interleukin-6 in adult-onset Still's disease: a meta-analysis. *Mod Rheumatol*. 2018;28(5):849–857. doi:10.1080/14397595.2017.1416924
48. Fautrel B, Mitrovic S, De Matteis A, et al. EULAR/PReS recommendations for the diagnosis and management of Still's disease, comprising systemic juvenile idiopathic arthritis and adult-onset Still's disease. *Ann Rheumatic Dis*. 2024;83(12):1614–1627. doi:10.1136/ard-2024-225851
49. Vignes S, Wechsler B, Amoura Z, et al. Intravenous immunoglobulin in adult Still's disease refractory to non-steroidal anti-inflammatory drugs. *Clin Exp Rheumatol*. 1998;16(3):295–298.
50. Quartuccio L, Maset M, De Vita S. Efficacy of Abatacept in a refractory case of adult-onset Still's disease. *Clin Exp Rheumatol*. 2010;28(2):265–267.