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(CASE REPORT)

Acute appendicitis complicated by ileocolic vein thrombosis with a unique coagulation profile: A case report

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Abstract

In the realm of common surgical emergencies, acute appendicitis rarely surprises clinicians. However, this case report explains an exceptional discovery in a 46-year-old man presenting with seemingly routine appendicitis at Hamad International Hospital, Doha, Qatar.

Contrast-enhanced CT imaging revealed not only a perforated appendix but also ileocolic vein thrombosis with unique coagulation profile - a case presentation previously rarely documented in medical literature. This report highlights the critical role of comprehensive diagnostics and the need for vigilance in seemingly straightforward cases, potentially reshaping our approach to acute appendicitis management.

Keywords: Acute appendicitis; Ileocolic vein thrombosis; CT imaging; Anticoagulation; Laparoscopic appendectomy

1. Introduction

Acute appendicitis, while common, occasionally presents with hidden complexities that challenge our clinical knowledge. While mesenteric vein and portal vein thrombosis has been reported in association with acute appendicitis (1,2) ileocolic vein thrombosis along with unique coagulation profile in this context is a very rare finding. This case report aims to shed light on this unique presentation, emphasizing the importance of thorough investigation even in seemingly routine cases.

2. Case Presentation

Our patient .a 46-year-old gentleman, arrived at our emergency department. He presented with three days history of periumbilical pain, associated with vomiting and high-grade fever. The dull ache that had migrated from his periumbilical region to the lower right quadrant of abdomen indicated a familiar picture of appendicitis.

On initial examination, blood pressure was 90/70 with a pulse rate of 110/min. His temperature was 102 F and maintained an oxygen saturation of 98 percent on room air. The abdomen was soft and lax with marked tenderness in the right iliac fossa. Bowel sounds were normal and there was no history of recent illness.

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Suspecting appendicitis, we ordered a contrast-enhanced CT scan of the abdomen. The images confirmed our initial diagnosis, revealing a dilated appendix measuring 15mm in diameter with thickened walls and surrounding fat stranding. More alarmingly, the scan showed a ruptured distal end of the appendix. But the real surprise came when we noticed a filling defect in the ileocolic vein, indicating thrombosis - a finding that set our team into high alert.

Laboratory investigations revealed a unique profile (Table 1), further complicating our patient case.

3. Management and Outcome

Keeping in view the possibility of sepsis, the infectious disease team was consulted urgently. Laboratory investigations were conducted along blood cultures, and the results are presented in table 1. We needed to address the appendicitis while also managing the potentially dangerous blood clot. Patient was started on piperacillin/tazobactam, prophylactic anticoagulant dalteparin and other supportive therapy. After initial stabilization in the emergency department, it was decided to consult the surgical team for a laparoscopic appendectomy.

The surgery went smoothly, confirming the CT findings. Three days after surgery he was discharged with oral antibiotics (cefuroxime and Augmentin) based on culture results, and a three-month course of rivaroxaban for the ileocolic vein thrombosis along with follow up CT at the end of the course to look for the resolution of the ileocolic vein thrombosis.

Table 1 Laboratory Investigations

Test	**Result**	**Reference Range**
White Blood Cell Count	5.9 x 10^9/L	4.0-10.0 x 10^9/L
Prothrombin Time	16.7 seconds	11.5-15.5 seconds
Protein C	52	70-140%
Antithrombin III (ATAC)	60.1	80-120%
C-Reactive Protein (CRP)	213.2 mg/L	<5 mg/L
Sodium	132 mmol/L	136-145 mmol/L
Bicarbonate	20 mmol/L	22-29 mmol/L
Albumin	34 g/L	35-50 g/L
Total Bilirubin	34 µmol/L	3.4-20.5 µmol/L
ALT	64 U/L	0-55 U/L
AST	49 U/L	5-34 U/L
Venous pH	7.47	7.35-7.45
PC02 Venous	31	
Blood culture	Positive for E.coli	
Lactic Acid	3.1mmol/L	0.5 -1 mmol/L
Venous HCO3	22.6 mmol/L	22-26 mmol/L

Figure 1 Contrast enhanced axial CT section of the abdomen at the level of the iliac fossae demonstrating a fluid distended thick-walled appendix (Long white arrow) with appendicoliths (short white arrow) and peri appendiceal fluid (white Asterix) in keeping with acute appendicitis

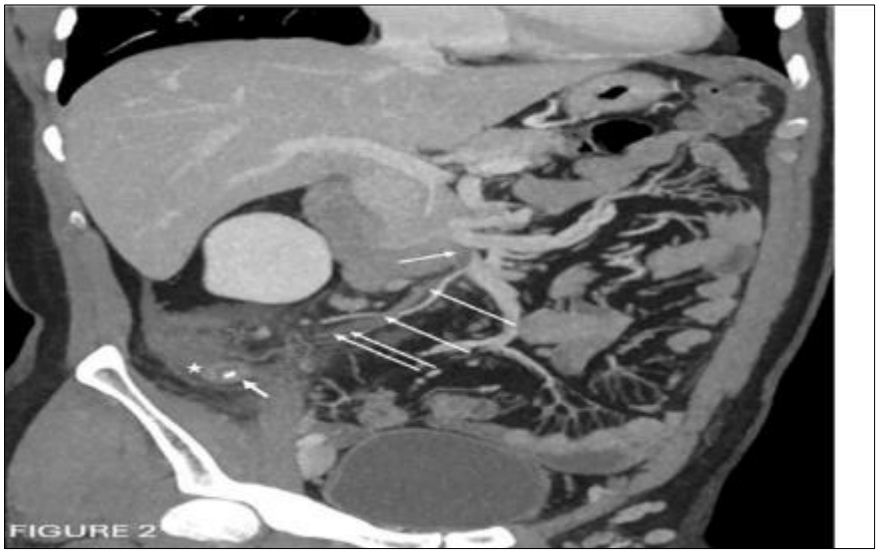

Figure 2 Coronal Oblique MIP image of the Contrast enhanced CT study of the abdomen demonstrating a long segment filling defect within the ileocolic vein (Long white arrows) extending to the adjoining segment of the superior mesenteric vein (short thin white arrow) suggesting thrombophlebitis. Peri appendiceal fluid (white Asterix) and thick-walled appendix containing appendicoliths (short thick arrow) are seen in keeping with acute appendicitis

4. Discussion

This case presents a rare and complex manifestation of acute appendicitis complicated by ileocolic vein thrombosis, accompanied by a unique coagulation profile. While appendicitis is a common surgical emergency, its association with ileocolic vein thrombosis along with this unique coagulation profile is exceptionally uncommon, with few cases reported in the literature.

The patient's presentation initially appeared consistent with typical acute appendicitis. However, the CT findings of ileocolic vein thrombosis alongside the perforated appendix highlighted the importance of thorough imaging in

seemingly straightforward cases. This unexpected complication underscores the potential for appendicitis to lead to more extensive vascular involvement, possibly due to the spread of inflammation or infection (3)

The patient's coagulation profile was particularly important. The elevated prothrombin time along with decreased levels of protein C and antithrombin III, suggests a complex interplay between inflammation, infection, and coagulation dysregulation. These findings align with previous studies demonstrating that acute appendicitis can possibly lead to alterations in the coagulation cascade (4)

The decreased protein C levels observed in this case are especially intriguing. While protein C deficiency is typically associated with an increased risk of venous thromboembolism, its role in the context of acute infection and inflammation, as seen in this case of appendicitis, is less well- understood (5). The patient's protein C level of 52% (reference range 70-140%) could be attributed to either a pre-existing deficiency exacerbated by the acute condition or a transient decrease due to consumption during the thrombotic event.

Moreover, it is noteworthy that despite the presence of acute appendicitis and venous thrombosis, Ahmed's white blood cell count was within normal range (5.9 x 10^9/L), which is atypical for such a presentation (6)

The management approach in this case, combining surgical intervention with anticoagulation therapy, reflects the complexity of treating concurrent appendicitis and venous thrombosis. The decision to perform a laparoscopic appendectomy followed by anticoagulation with rivaroxaban aligns with current best practices for managing complicated appendicitis and venous thromboembolism (6)

This case raises several important clinical considerations. Firstly, it emphasizes the need for clinicians to maintain a high index of suspicion for vascular complications in cases of acute appendicitis, particularly when presenting with atypical features or severe inflammation. Secondly, it highlights the value of comprehensive imaging in guiding management decisions, even in seemingly routine cases. Lastly, it underscores the importance of a multidisciplinary approach in managing complex cases that involve multiple specialties.

Future research could focus on explaining the mechanisms linking acute appendicitis to venous thrombosis, particularly in the ileocolic region. Future prospective studies on coagulation abnormalities in acute appendicitis could provide valuable insights for risk assessment and treatment planning.

In conclusion, this case report adds to the limited literature on ileocolic vein thrombosis complicating acute appendicitis and highlights the importance of thorough diagnostic workup and individualized management in surgical emergencies. It serves as a reminder that even common conditions can present in uncommon ways, necessitating vigilance and adaptability in clinical practice.

5. Conclusion

This case highlights the importance of maintaining a high index of suspicion for venous thrombotic complications in patients presenting with acute appendicitis, even when initial laboratory findings are equivocal. The unique coagulation profile observed in our patient suggests that comprehensive coagulation studies may be warranted in such cases to identify potential underlying thrombophilic states. Furthermore, this report underscores the critical role of contrast-enhanced CT in diagnosing both the primary condition and its vascular complications, enabling timely and appropriate management.

Compliance with ethical standards

Acknowledgments

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Disclosure of conflict of interest

The authors declare no conflicts of interest.

Statement of ethical approval

Ethical approval was obtained from the institutional ethics committee for the publication of this case report.

Statement of informed consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

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