A man in his early 70s walked into the emergency department with a 4-day history of fever and tingling sensation in the chest. His medical history was significant with hypertension, intracranial hemorrhage, and chronic kidney disease (CKD). On arrival, his blood pressure was 130/64 mm Hg, heart rate was 104 beats/min, respiratory rate was 32 breaths/min, body temperature was 37.1°C, and arterial oxygen saturation was 95% on room air. There was no murmur, rub, or gallop in chest auscultation. Electrocardiographic (ECG) findings were significant for diffuse ST-segment elevation (Figure 1, A). Laboratory examination revealed leukocytosis with normal cardiac enzyme levels and mild renal dysfunction (serum creatinine, 1.4 mg/dL [to convert to micromoles per liter, multiply 88.4]). The C-reactive protein level was also elevated. He was admitted to the hospital with the suspected diagnosis of acute pericarditis. After admission, his chest discomfort resolved in 2 days, but he was still febrile, and pericardial effusion did not decrease. Computed tomography (CT) of the chest was performed (Figure 1, B and C).
Diagnosis

C. Acute aortic dissection

Discussion

Acute aortic dissection remains a diagnostic challenge. In rare cases, a combination of atypical clinical features may mask aortic dissection; such delayed diagnosis could result in the patient’s death.1–4 Our patient presented with fever, pericardial effusion, and diffuse ST-segment elevation on ECG, a combination of which strongly suggested acute pericarditis. Although up to 30% of patients with acute aortic dissection have pericardial effusion (sometimes with tamponade),5 acute pericarditis with a small amount of pericardial effusion is rare as an initial manifestation of aortic dissection. We are aware of only several case reports, mostly in young populations.6,7 In addition, ECG change in patients with aortic dissection is rare. A previous study8 identified that the incidence was 1.3% (2 of 159 cases).

Rigorous search for the cause of acute pericarditis is lifesaving in patients with risk factors for delayed diagnosis of aortic dissection. In rare cases,8 mild pericardial effusion is caused by this medical emergency. Risk factors for missed or delayed diagnosis include fever, dyspneic presentation, pleural effusion, female sex, age younger than 70 years, transfer from primary hospitals, systolic blood pressure of 105 mm Hg or higher, troponin positivity and acute coronary syndrome-like ECG findings.1,2 Walk-in presentation to the emergency department was also a significant predictor of delayed diagnosis.3,4

In addition to acute pericarditis, our patient walked into the emergency department, with fever and systolic blood pressure of 130 mm Hg. He also visited his primary care physician before coming to the emergency department. A previous study9 revealed that the tests to evaluate disease processes other than aortic dissection resulted in unexpected findings of acute aortic dissection in 30% of cases with inappropriate initial diagnosis, as in the present case. Unenhanced CT performed for evaluation of the cause of pericardial effusion resulted in serendipitous diagnosis of aortic dissection. Notably, a high-attenuated crescent on unenhanced CT, representing hematoma in the aortic wall, has a specificity of 99.1%, and a positive likelihood ratio of 69.6 in the diagnosis of aortic dissection.9 This finding highlights the utility of unenhanced CT in emergency settings. In our patient, the CKD prevented us from conducting enhanced CT as first-line imaging.

For this patient, unenhanced CT revealed possible aortic wall thickening (a high-attenuation crescent) in the ascending aorta (Figure 1, B and C, and Figure 2, A and B). Contrast-enhanced CT was then performed on which Stanford type A dissection was detected (Figure 2, C and D). The patient underwent an emergency ascending aortic replacement. An aortic dissection was confirmed with an intimal tear lying just above the aortic valve. Light reddish pericardial effusion suggestive of an exudate from the intramural hematoma was identified. Pathologic examination revealed cystic medial necrosis and small sites of erythrocyte extravasation in the outer media. Test results for autoantibodies and cardiac enzymes were all negative, and no malignant neoplasms were detected on the CT. Although the patient experienced deep venous thrombosis postoperatively, he was discharged home without other major complications.

REFERENCES