The patient was a 43-year-old man who was previously healthy. He suddenly manifested constricting left precordial pain and respiratory distress; he was therefore transported by ambulance to a hospital for an emergency examination. At that time, his blood pressure was 111/81 mmHg; pulse, 90 bpm; respiratory rate, 21 breaths/min; SpO2, 96% (no oxygen) and he was lucid. His heart and breathing sounds demonstrated no evident abnormalities. Blood testing did not demonstrate any abnormal findings. On electrocardiography (ECG), voltage was extremely low in the precordial leads, particularly in leads V2 and V3 (Figure 1a). On echocardiography, sufficient echocardiographic windows could not be obtained due to free air. Plain radiographs of the chest, which were taken with the patient in a decubitus position due to his being transported to the hospital on a stretcher, revealed pneumothorax in the inferior lobe of the left lung. Thoracic computed tomography revealed predominantly left anterior pneumothorax. A chest tube was inserted to treat the pneumothorax, for which the patient required hospitalization. The pneumothorax improved, and ECG was performed again. This subsequent ECG revealed no abnormal findings (Figure 1b).

Left-sided pneumothorax is known to present with ECG changes, such as low QRS voltage in the limb leads and precordial leads, poor R-wave progression in the precordial leads and an increased QRS complex (QRS) voltage ratio (aVF/I).1,2 Due to the presentation of chest pain, the diagnosis of left-sided pneumothorax on ECG requires differentiation from acute anterior myocardial infarction.

Figure 1. (a) Electrocardiography results at emergency outpatient examination voltage is extremely low in the precordial leads, particularly in leads V2 and V3. (b) Electrocardiography results following pneumothorax improvement compared to the results of the electrocardiogram performed during the emergency outpatient examination, voltage was increased in leads II, III and aVF, as well as in all precordial leads.
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Conflict of interest: None declared.

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