

Case Report

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Electrocardiogram Manifestations in Traumatic Right-sided Pneumothorax: Case Report



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Abstract

This report describes a case of a patient with right-sided pneumothorax presenting with classic electrocardiographic findings such as low voltage, extreme axis deviation to the right and tall R-wave in V1 suggesting right-ventricle overload. Drainage and aspiration were performed stabilizing the patient.

Keywords: Pneumothorax; Right-sided pneumothorax; Electrocardiography

Introduction

Electrocardiogram (ECG) findings such as right axis deviation, QSR abnormalities, T-wave inversions and ST-segment alterations [1] may lead to misdiagnosis of pneumothorax [2]. We describe a case of pneumothorax presenting with changes in ECG.

Case Report

A 74-year-old male was admitted to the emergency department with chest pain 72 hours after a fall. The patient

had a past medical history of hypertension, hyperlipidemia and smoking (5pack/year).

At admission, the patient was in antalgic position and with shortness of breath. Examination revealed blood pressure of 148/90mmHg, cardiac frequency of 66beats/min, oxygen saturation of 88% and decreased breath sounds at right hemithorax.

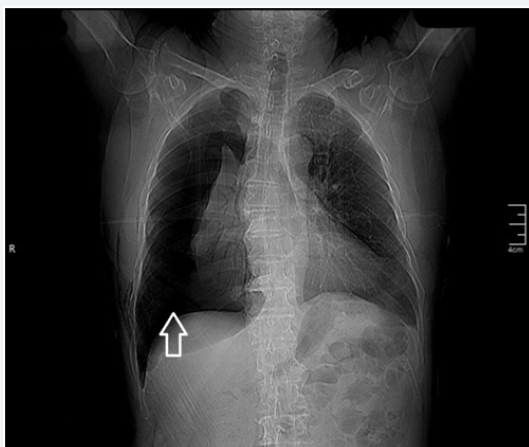


Figure 1: X-ray showing the fractures and right pneumothorax (arrow).

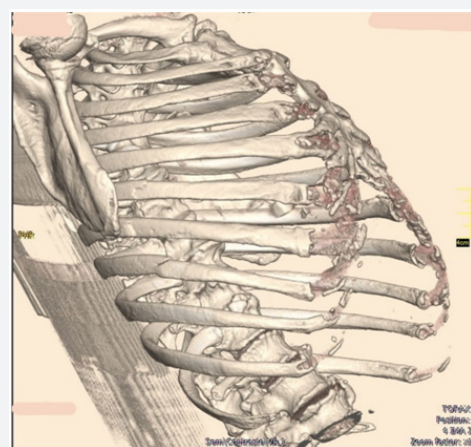


Figure 2: 3D reconstruction Computed Tomography showing the fractures.

Admission X-ray and computed tomography showed fracture at the sixth, seventh and eighth right costal arches with significant right pneumothorax (Figure 1 & 2). ECG showed low voltage,

extreme axis deviation to the right and tall R-wave in V1 suggesting right-ventricle overload (Figure 3).

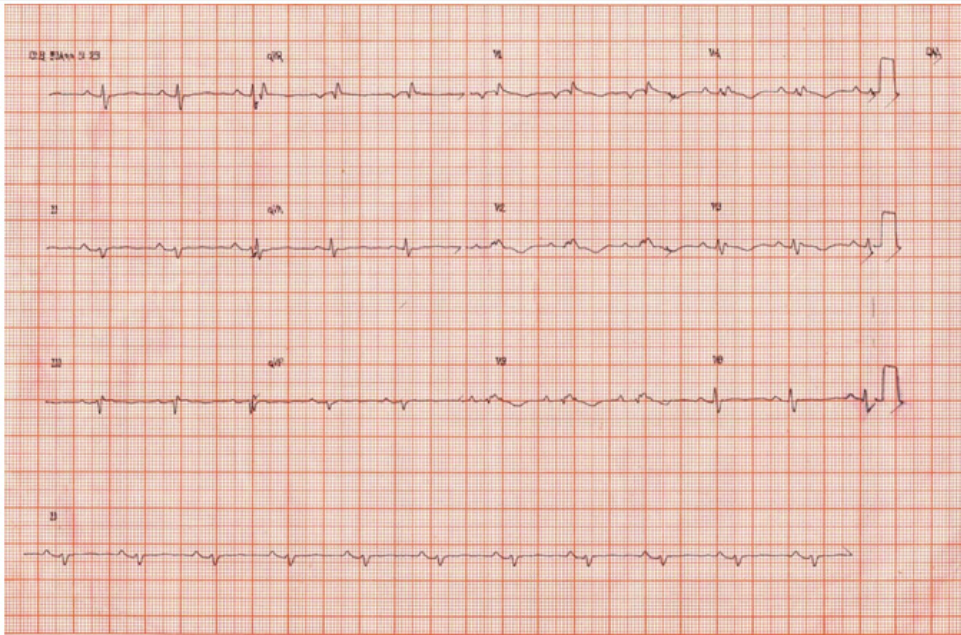


Figure 3: Admission electrocardiogram -low voltage, extreme axis deviation to the right and tall R-wave in V1.

Drainage and continuous aspiration were performed for 48 hours; discharge after 72 hours of hospitalization and normal

ECG, except for early repolarization on lateral leads (Figure 4).

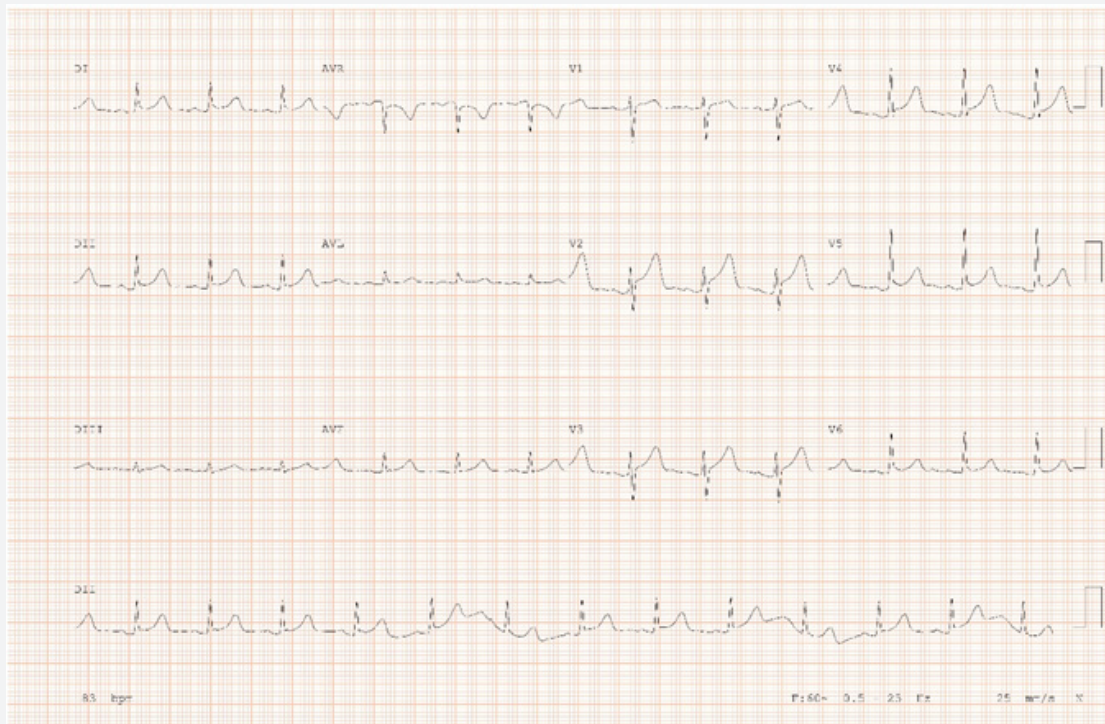


Figure 4: Discharge electrocardiogram -normal ECG, except for early repolarization on lateral leads.

Discussion

The main ECG findings in pneumothorax cases include decreased QRS complex amplitude, QRS axis deviation, electrical alternans, reduced precordial R-wave voltage and precordial T-waves [3], being present in approximately 25% of the cases [1,2]. ST-segment deviations are also rare findings in patients with pneumothorax [2,4].

The potential mechanisms behind the ECG changes in patients with pneumothorax are: the cardiac rotation around its axis; right ventricular dilatation due to increased pulmonary artery pressure; cardiac displacement; and air in the thoracic cavity acting as an insulator [3,5].

Depending on the size, amount of tension and the side involved on pneumothorax, the magnitude of ECG changes can vary substantially [3]. In left-sided pneumothorax, the most common findings include abnormal axis deviation and T-wave inversion [2]. Right-sided often include reduced QRS voltage and QRS axis changes [3].

Krenke et al. [2] showed that in right-sided pneumothorax the QRS axis deviation is mainly to the right without exceeding 30° and the QRS amplitude in V5 and V6 leads is increased [2].

However, in the case described, there is an extreme axis deviation to the right and decreased voltage in all leads, including V5-V6.

Conflict of Interest

The authors certify that they have no affiliations with or involvement in any organization or entity with any financial interest, or non-financial interest in the subject matter or materials discussed in this manuscript.

References

1. Alzghoul B, Innabi A, Shanbhag A, Chatterjee K, Amer F, et al. (2017) Iatrogenic right-sided pneumothorax presenting as ST-segment elevation: a rare case report and review of literature. *Case Reports Crit Care* 2017: 3291751.
2. Krenke R, Nasilowski J, Przybylowski T, Chazan R (2008) Electrocardiographic changes in patients with spontaneous pneumothorax. *J Physiol Pharmacol* 59(Suppl 6): 361-373.
3. Pollack ML (2006) ECG manifestations of selected extracardiac diseases. *Emerg Med Clin North Am* 24(1): 133-143.
4. Shiyovich A, Vladimir Z, Neshet L (2011) Left spontaneous pneumothorax presenting with ST-segment elevations: a case report and review of the literature. *Hear Lung* 40(1): 88-91.
5. Yeom SR, Park SW, Kim YD, Ahn BJ, Ahn JH, et al. (2017) Minimal pneumothorax with dynamic changes in ST segment similar to myocardial infarction. *Am J Emerg Med* 35(8): 1210.e1-1210.e4.



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