Himalayan P waves in the setting of severe hypoxemia and emphysema

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A 55-year-old woman presented with shortness of breath of sudden onset. The patient had severe hypoxemia (partial pressure of O₂ 65 mmHg by 100% non-rebreather mask) and was intubated for ventilatory support. A chest x-ray revealed hyperinflated lungs, and an electrocardiogram (Figure 1) revealed Himalayan P waves with a rightward axis shift in leads II, III and aVF.

The patient had a long-standing history of chronic obstructive pulmonary disease (steroid dependent) but no evidence of congestive heart failure (normal B-type natriuretic peptide on admission and normal left ventricular ejection fraction with moderate pulmonary arterial hypertension).

Even though enlarged P waves (P pulmonale and P congenitale waves) are commonly seen in congenital heart diseases with right to left shunt, where they tend to be persistent (1), similar P waves can also be found in severe chronic obstructive pulmonary disease exacerbations as in the present case, where they are nearly always transient if

appropriate treatment is used (2). The tall P wave is due to the patient's low diaphragm position (related to long-standing emphysema) (3) and the severity of the right atrial hypoxia (directly related to severity of the bronchospasm) (4).

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Figure 1

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