

Special Edition  
"Revisiting Physical Diagnosis in  
Respiratory Medicine"

## Case Report

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# Utility of a Sticky Note "Post-it" and a Cotton Swab as a Tool to Aid Cardiac Examination

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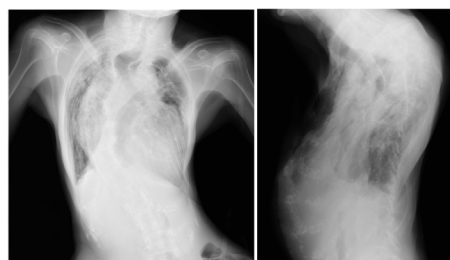
## CASE REPORT

A 68-year-old woman was admitted to our hospital because of worsening dyspnea on exertion for one week. She had been treated with supplemental oxygen with nasal cannula (0.25 L/min at rest and 0.5 L/min during exercise) for type II respiratory failure due to restrictive lung disease from severe kyphoscoliosis. On examination, the patient was in respiratory distress with tachypnea. The temperature was 37.1 °C, the pulse 86 beats per minute, respiratory rate 32 breaths per minute, and the blood pressure 120/80 mmHg. Examination of the neck demonstrated the jugular venous pressure of 10 cm of water, and examination of the chest revealed limited movement of the chest due to deformities of thoracic spine and rib cage, which was consistent with the known diagnosis of severe kyphoscoliosis. Point of maximal impulse (PMI) of the left ventricle was located at the 6<sup>th</sup> intercostal space at the left midclavicular line.

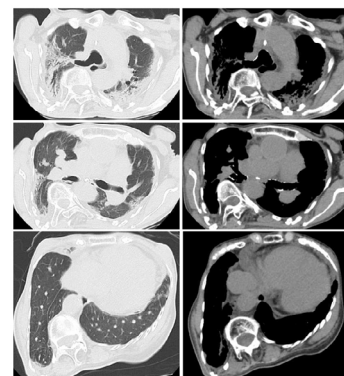
Arterial blood gas analysis revealed worsening hypoxemia compared with her baseline: pH 7.379, pCO<sub>2</sub> 57 mmHg, pO<sub>2</sub> 54.6 mmHg, HCO<sub>3</sub><sup>-</sup> 32.9 mEq/L, and oxygen saturation (SpO<sub>2</sub>) 85% while she was breathing with supplemental oxygen of 0.5 L/min *via* nasal cannula.

Chest radiograph revealed severe kyphoscoliosis with tracheal deviation (Figure 1), which was confirmed by computed tomography (CT) of the chest (Figure 2). Electrocardiogram (ECG) showed a pulmonary p wave, tall R wave in V1, deep S wave in V5/V6, and right axis deviation (Figure 3), suggesting right ventricular hypertrophy.

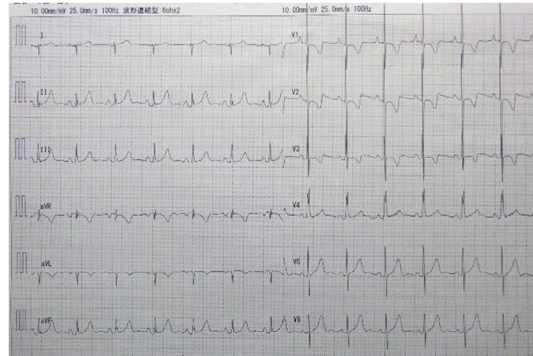
Of note, movement of PMI was better visualized by applying a sticky note "Post-it" (Video 1) and a cotton swab (Video 2) on the chest wall. This revealed PMI is moving regularly with non-sustained tapping pattern. Similarly, pulsatile movement of carotid artery was better visualized by attaching a cotton swab to the neck. This movement was without pulsus tardus (Video 3), suggesting neither left ventricular hypertrophy nor aortic valvular heart dis-



**Figure 1:** Chest radiograph on admission revealed severe thoracic deformities with tortuous trachea.



**Figure 2:** Computed tomography (CT) of the chest demonstrates severe thoracic cage deformities.



**Figure 3:** Electrocardiogram on admission revealed a pulmonary p wave, tall R wave in V1, deep S wave in V5/V6, and right axis deviation.



**Video 1:** Movement of PMI by applying a sticky note "Post-it" on the chest wall.



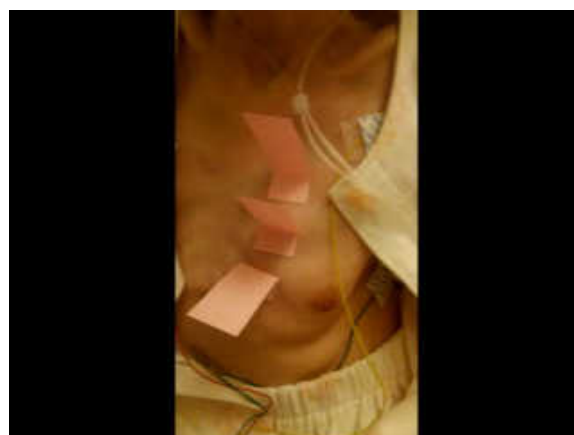
**Video 2:** Movement of PMI by applying a cotton swab on the chest wall.



**Video 3:** Movement was without pulsus tardus.



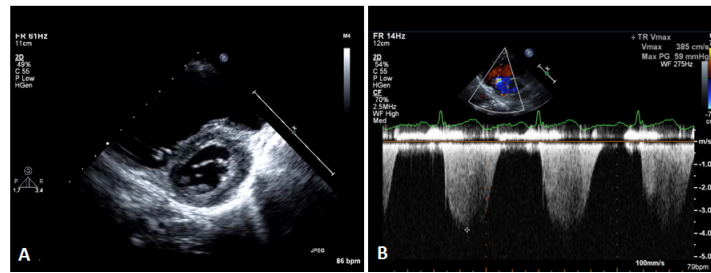
**Video 4:** Parasternal heave was also clearly visualized by attaching a "Post-it" at the second parasternal left intercostal space (LICS) and the third LICS in both supine position.



**Video 5:** The parasternal heave was also clearly visualized by attaching a "Post-it" at the second parasternal left intercostal space (LICS) and the third LICS in sitting position.

**Note:** To best view

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**Figure 4:** Echocardiography with parasternal short axis view at the level of papillary muscle (mid-ventricular level) demonstrates dilated right ventricle with compressed left ventricle (Figure 4A) together with severe tricuspid regurgitation with pressure gradient of 59 mmHg (TR velocity of 3.85 m/s) (Figure 4B).

ease is present. On further examination, auscultation of the heart revealed accentuated pulmonary component (P2) of the second heart sound (S2) together with parasternal heave. The parasternal heave was also clearly visualized by attaching a “Post-it” at the second parasternal left intercostal space (LICS) and the third LICS in both supine (Video 4) and sitting position (Video 5). Based on those physical findings, including elevated jugular venous pressure, accentuated P2, and parasternal heave, she was diagnosed with worsening right heart failure.

Echocardiography confirmed the presence of right heart failure by enlargement of right ventricle and elevated estimated pulmonary artery systolic pressure of 69 mmHg calculated from tricuspid regurgitation (TR) velocity (Figure 4). After increasing the dose of oral furosemide, her respiratory status improved, and she was discharged on the 10<sup>th</sup> hospital day.

The case illuminates that a sticky note “Post-it” and a cotton swab can be a powerful diagnostic tool to aid our observation of PMI or carotid pulse, which could be otherwise difficult. These inexpensive bedside tools enable us to diagnose heart failure at the bedside more easily and quickly, as seen in our case, even prior to the application of echocardiography to further facilitate the treatment.

#### CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest.

#### CONSENT

The authors obtain written informed consent from the patient for submission of this manuscript for publication.