Revealing the Truth of Severe Right Axis Deviation Due to Large Hiatal Hernia

To the Editor:

Professor Tsai et al\(^1\) shared a meaningful and well-documented case of a patient’s electrocardiogram (ECG) manifesting as dextrocardia due to a large hiatal hernia and that completely resolved after surgery. The authors attributed the “severe right axis deviation” and “P and T wave inverted in lead I and aVL” in initial ECG to the dextrocardia. However, based on the findings in this article, we believe that the ECG manifestation is due to leads misplacement; in other words, electrodes connected left upper limb and right upper limb were mistakenly exchanged. Scrutinizing the 2 ECGs, we can uncover the following findings (Figure): 1) lead I in initial ECG (ECG 1) = - lead I in postoperative ECG (ECG 2); 2) lead II\(_{ECG} \) = lead III\(_{ECG} \) = lead II\(_{ECG} \); 3) aVR\(_{ECG} \) = aVL\(_{ECG} \) = aVR\(_{ECG} \). For the limb leads, the findings in preoperative ECG indicated either mirror-image dextrocardia or lead misplacement of left and right upper limb, and the former can be excluded by the computed tomography result and the ECG manifestation after surgery.

Unlike the mirror-image dextrocardia or complex transposition of great artery, mass compression due to large hiatal hernia, left pneumothorax often manifested as dextroposition or dextroversion with situs solitus\(^2\), which also confirmed by the computed tomography images. Thus, atrial depolarization proceeds normally from a right sinus node even in right thoracic cavity, and the P-wave axis is always normal or mild right deviation unless combined with ectopic atrial arrhythmia\(^3\).

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https://doi.org/10.1016/j.amjmed.2022.02.022

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