Right Ventricular Overload - ECG

Overload of the right ventricle is a common finding in chronic cardiac patients. The ECG changes are compatible with the RBBB. In lead V1 there are QRS complexes with positive amplitudes and high ending R wave or RSR’ QRS pattern. In leads V1-V2 there may be ST depressions and negative T waves. Cardiac axis is deviated vertically. We can find high P waves (so called P-pulmonale pattern) in leads II, III and aVF that inform us about the overload of the right atrium.

This record shows changes typical for RBBB in V1 and V2 (red). The cardiac axis is vertical according to the relationship of QRS amplitudes in aVL and aVF. In leads II, III, aVF we see high P waves (blue) that corresponds to the P-pulmonale. In addition, there are ST interval depressions with negative T waves in leads II, III and aVF that can be related either to the overload or to a local cardiac ischemia.

Conclusion: In clinical praxis, the above-mentioned finding is typical for patients with pulmonary hypertension, cor pulmonale and also in patients with acute extensive pulmonary embolism. If the finding is diagnosed newly, it is appropriate to execute an echocardiography and evaluate the presence of pulmonary hypertension.