



What We Know About S1Q3T3 Electrocardiographic Findings: A Case Report and Literature Review

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SUMMARY

The World Health Organization (WHO) defines pneumonia as a form of acute respiratory infection that affects the lung parenchyma and oxygenation. Diagnosis is based on clinical appearance confirmed by a chest X-ray (CXR) showing consolidation. The authors describe a patient who presented with a chief complain of an attack of dizziness and near syncope. Patient presented with headache, low-grade fever, non-productive cough and chest tightness. He was tachycardic with normal blood pressure and oxygen saturation (O2Sat) 97%. His ECG Showed S1Q3T3 pattern with a concern for pulmonary thromboembolism (PE) which prompt obtaining chest CT scan with IV contrast didn't reveal pulmonary thromboembolism but showed a right-sided consolidation. Patient's EKG findings resolved after treating pneumonia. This case demonstrates the cardiac electrographic findings of S1Q3T3 can be seen in patients with lobar pneumonia.

INTRODUCTION

The electrocardiogram is a valuable clinical diagnostic tool. Although S1Q3T3 findings on the electrocardiogram can be a helpful clue in the diagnosis of pulmonary thromboembolism (PE) but these findings might be seen in patients with ventilation perfusion (VQ) mismatch like pneumonia. The role of electrocardiogram in pneumonia has been sparsely studied. We are reporting a rare case of young patient with lobar pneumonia presenting with S1Q3T3 EKG findings resolved after treatment.

The electrocardiogram can be helpful determining tool in differentiating pneumonia from pulmonary embolism (PE) with S1Q3T3 findings but common EKG findings still tachycardia. On electrocardiogram may hint that PE is present when interpreted in the proper context and lead to

definitive imaging tests. However, it would be useful to know if electrocardiographic (ECG) abnormalities also occur in patients with pneumonia and whether they are similar to ECG changes with PE. The purpose of this was to determine That S1Q3T3 can happen in Pneumonia. ^{[6][1]}

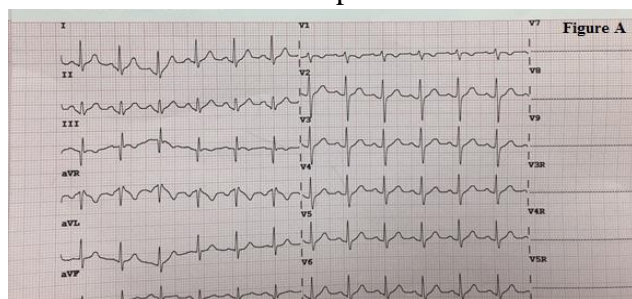
CASE PRESENTATION

35-year-old Middle Eastern male with no past medical history presented to emergency department with a chief complain of an episode of dizziness and near syncope. Patient presented with cough, runny nose, generalized weakness, Dizziness & headache for 2 weeks, which partially improved without treatment. Few days after his symptoms improved he started experiencing low-grade fever, headache, cough

and chest tightness. He went to a private doctor and was diagnosed as sinusitis and was managed accordingly with no significant improvement. Social history was significant for 1 pack per day smoking history denies eliciting any drugs or alcohol consumption. No history of recent travel. No significant family history of Thromboembolic disorders.

Patient was conscious, alert & oriented on physical exam. His vital signs upon arrival were: blood pressure 126/65 and heart rate of 120 beats per minute (tachycardic) and O₂ Sat 97%. His chest exam was not conclusive.

His EKG revealed S1Q3T3 pattern as shown below in (Figure A). His laboratory results were normal including complete blood count, blood chemistry, B-type Natriuretic peptide, Coagulation profile, cardiac Troponin and D-dimer. His CXR was unremarkable for infiltrate. Giving his EKG finding there was a concern for PE Chest CT scan with IV contrast obtained and showed right-sided consolidation with no evidence of PE as shown in (Figure B). Patient was treated for right-sided pneumonia, EKG finding were resolved on follow up visit.



(Figure A) EKG showed S1Q3T3



(Figure B) Chest CT scan showed right sided consolidation and no evidence of pulmonary thromboembolism (PE).

DISCUSSION

McGinn and white first described S1Q3T3 findings and linked its association with PE on 1935. They also noted familiar pattern in 7 patients with acute cor-pulmonale.

Both McGinn and White described ECG patterns of deep S wave in lead I, Q wave in lead III and inverted T wave in lead III in patients with right ventricular change secondary to pulmonary vascular disorders like in Right ventricular dilatation, Pulmonary hypertension and Pneumothorax.^{[3][4]}

Petruzzelli and his colleagues described ECG findings in patients with PE, They found that the commonest findings were Sinus tachycardia and S-T depression. Interestingly, S1Q3T3 was significant sign in patients with embolic PE, which support McGinn and white Findings.^[2]

It seems plausible that pulmonary vascular interruption might prompt to S1Q3T3 ECG findings like pneumonia. Stein P.D and colleague did a small retrospective study patients looking for ECG findings in patients with pneumonia in 63 individuals. 4/63(4.8%) were noted top have S1Q3T3 ECG findings which is similar to our patient.^[1]

It appears logical that in the absence of underling pulmonary and cardiac disease it would be unlikely to see any significant ECG findings in patients with minimal pulmonary infiltrate.^[5] Although it rarely can happen in patients with pneumonia.

In conclusion, McGinn-White pattern (S1Q3T3) still classically linked to PE but it can present in other cases like; Pneumonia, Cor-pulmonale, Pneumothorax and Neoplastic disease.

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