Case report: a unique case of sinus arrest and consequent symptomatic bradycardia caused by severe iatrogenic hypocalcemia

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Introduction: Plasma calcium concentration is maintained within a narrow range between 2.2 and 2.6 mmol/L. Severe hypocalcemia is defined by a concentration below 1.9 mmol/L[1]. Decrease of extracellular calcium concentration slows down spontaneous sinus node beating (pacemaking) significantly by attenuation of ICaL (L-type Ca2+) and INaCa (sodium/calcium exchanger) current during late diastolic depolarization. It is usually compensated by a higher sympathetic tone, but in hypocalcemic circumstances, an abrupt decrease in sympathetic tone could reveal a low basal sinus node beating rate and result in severe bradycardia.[2]

Case report: 80-year-old female patient was admitted to the Emergency Department due to chest pain, nausea, frequent dizziness, and lightheadedness, but without loss of consciousness. The symptoms lasted for about 10 days. She has arterial hypertension and hyperlipidemia, and in 2018, a total thyroidectomy was performed due to thyroid cancer. She was regularly checked by an endocrinologist due to iatrogenic hypoparathyroidism. Upon arrival, basic laboratory workup and X-ray were done. During continuous 12-lead electrocardiogram monitoring, a sinus rhythm with a frequency of around 50/min was recorded, with episodes of sinus node arrest and consequent acquisition of the atrioventricular node resulting in symptomatic bradycardia. With regard to the symptomatic bradycardia, she was admitted to the Department of Cardiology. A detailed medical history revealed that the patient had recently stopped taking calcitriol that was prescribed earlier by an endocrinologist. In the further work-up, the electrolytes were checked, and severe hypocalcemia (1.65 mmol/L) was verified. Echocardiography was normal. During hospitalization, hypocalcemia was corrected, after which automaticity of the sinus atrial node was restored without episodes of sinus arrest. The patient no longer had bradycardia nor complaints of dizziness and lightheadedness. Calcitriol was reintroduced into the therapy. It was recommended to regularly check electrolytes and to take chronic therapy in addition to an outpatient 24-hour ECG.

Conclusion: To the author's best knowledge, this is one of the few cases in which severe hypocalcemia led to sinus arrest and subsequent symptomatic bradycardia.

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LITERATURE

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