Sinus bradycardia: an unusual manifestation of mild to moderate COVID-19 pneumonia

La bradycardie sinusale: manifestation des formes modérées du COVID-19

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The coronavirus disease 2019 (COVID -19) represents the pandemic of the century. It has led to approximately 40 million cases and more than one million deaths worldwide, as of October 2020 (1). While it has been demonstrated that this virus has a predilection for the lungs and that respiratory complications are strongly associated with mortality, emerging reports show that cardiac involvement can be present in COVID -19 patients, including myocardial injury, myocarditis, acute coronary syndromes, pulmonary embolism, heart failure, cardiogenic shock and arrhythmias. One of the most frequently reported arrhythmias is sinus bradycardia (SB), especially in patients with severe condition or concomitant and in contrast with body temperature > 38°C (2 –5). It was reported in 16.7% of the patients in an early cohort from China and was present in almost half of the patients in critical care units (6). However, data is still lacking in patients with mild to moderate COVID. To our knowledge, SB has not been reported in Tunisia. Our primary aim was to determine the frequency and describe clinical features in COVID -19 patients with SB hospitalized at the Infectious Diseases and Cardiology departments of the Farhat Hached University Hospital in Sousse since August 2020. We hereby report a cohort of hospitalized patients with mild to moderate COVID -19 infection, confirmed by RT -PCR test, according to national guidelines (7). We included patients with SB, defined by a sinus heart rate < 60 bpm lasting for at least 30 minutes and documented by monitor recording or electrocardiogram. Patients with known factors affecting pulse rate, or having a SB due to rapid deterioration and unstable vital signs, or low heart rate before death were excluded. Among the 78 patients having a mild to moderate COVID -19 pneumonia, 12 patients (15%) presented a SB (table 1). Heart rate ranged from 40 to 58 bpm. The median of SB appearance was on the 16th day from the onset of illness, ranging from 7 to 28 days. All patients had no signs of myocarditis, myocardial infarction nor left ventricular dysfunction. In addition, electrocardiogram showed SB without ST segment deviation or T wave inversion. During monitoring, SB often occurred during sleep. No patient received a specific medication for SB. All patients recovered and were discharged from hospital. The disappearance of SB was followed by clinical improvement within 24 to 48 hours. Our study demonstrated that SB was frequently detected in hospitalized patients with moderate COVID -19 pneumonia. However, it was not associated with poor prognosis. In similar studies, SB has been more frequently reported in severe forms (5, 6, 8). Furthermore, relative bradycardia was recently reported in COVID -19 febrile patients (4, 9). The frequent occurrence during sleep was also reported, without any justification. Another study reported SB occurring at night in patients with

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severe COVID -19 pneumonia in whom high nasal flow oxygen or mechanical ventilation was needed (5). There is a need to carefully observe the occurrence of sinus bradycardia because it could potentially be a clinical sign of COVID -19 even in mild to moderate forms.

Table 1 Baseline characteristics of 12 patients with sinus bradycardia

Age	59 years (36, 77)
Females	33% (4)
Diabetes	25% (3)
Hypertension	33% (4)
Hypercholesterolemia	17% (2)
Coronary Artery Disease	8% (1)
Down syndrome	8% (1)
Disease duration	4 days (1, 8)
Hospital stay duration	10 days (7, 21)
Oxygen needed	8 L/min (6,12)
Troponin	8.9 pg/ml (4,13)
C-Reactive Protein	66 mg./l (2,150)
Steroid treatment	83% (10)

Values are displayed in means (extreme values) or frequencies and numbers.

REFERENCES

1. WHO. https://www.who.int/emergencies/diseases/novel Coronavirus (visited 26 October 2020).
2. Kir D, Mohan C, Sancassani R. Heart Brake: An Unusual Cardiac Manifestation of COVID-19. JACC Case Rep. 2020;2(9):1252-5.
3. Peigh G, Leya MV, Baman JR, Cantey EP, Knight BP, Flaherty JD. Novel coronavirus 19 (COVID-19) associated sinus node dysfunction: a case series. Camm CF, Cinier G, Ang R, Camm CF, Thomson R, éditeurs. Eur Heart J - Case Rep. 2020;4(FI1):1-6.
4. Capoferri G, Osthoff M, Egli A, Stoeckle M, Bassetti S. Relative bradycardia in patients with COVID-19. Clin Microbiol Infect. 2020; S1198743X2030495X.
5. Hu L, Gong L, Jiang Z, Wang Q, Zou Y, Zhu L. Clinical analysis of sinus bradycardia in patients with severe COVID-19 pneumonia. Crit Care. 2020;24(1):257
6. Wang D, Hu B, Hu C, Zhu F, Liu X, Zhang J, et al. Clinical Characteristics of 138 Hospitalized Patients with 2019 Novel Coronavirus–Infected Pneumonia in Wuhan, China. JAMA. 17 mars 2020;323(11):1061-9.
7. http://www.ineas.tn/fr/actualite/guide-parcours-du-patient-suspect-ou-confirme-covid-19
8. Amaratunga E.A., Corwin D.S., Moran L., Snyder R. Bradycardia in Patients with COVID-19: a calm before the storm? Cureus. 2020;12(6): e8599.
9. Ikeuchi K, Saito M, Yamamoto S, Nagai H, Adachi E. Relative Bradycardia in Patients with Mild-to-Moderate Coronavirus Disease, Japan. Emerg Infect Dis. 2020;26(10):2504-2506. https://dx.doi.org/10.3201/eid2610.202648