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Letter to the editor

White coat hypertension during the SARS-CoV-2 pandemic

The severe acute respiratory syndrome coronavirus type 2 (SARS-CoV-2) was first reported in China in 2019. Subsequently, SARS-CoV-2 spread and became the fifth pandemic in the last two decades, following SARS in 2003, H1N1 flu (swine flu) in 2009, Ebola in 2014, and ZIKA in 2015. Due to the specific structure of the viral proteins, they experience many mutations threatening global health, especially in individuals with comorbidities. Stress, as a risk factor causing hypertension, particularly in the case of white coat hypertension (WCHT), is a threat to increase the severity of COVID-19.^{1–3} Therefore, this brief letter focuses on WCHT.

White coat hypertension, also referred to as white coat syndrome, is a type of unstable blood pressure (BP) in which people in a clinical setting exhibit BP levels above the normal range but not in other circumstances. In other words, the BP in medical and dental clinics can be elevated to $\geq 140/90$ mmHg, compared with the home-measured BP of $< 135/80$ mmHg. In this respect, managing WCHT can be prioritized to avoid severe COVID-19 and cardiovascular events.^{2,4}

In a clinical study by Andersson et al., 980 male and 1045 female individuals aged between 40 and 75 years were screened for a routine annual dental examination to detect WCHT. Based on BP measurement, participants were divided into three categories: 1) normal BP, 2) WCHT, and 3) suspected hypertension. The study reported that 1303 individuals had normal BP. Also, 251 and 335 individuals in the dental clinic were diagnosed with hypertension and WCHT, respectively. In this study, the prevalence of WCHT was 17.7%. Regarding cardiovascular risk factors, patients with WCHT have a high potential for asymptomatic cardiovascular damage and a higher long-term risk of developing persistent hypertension.⁴ Therefore, a healthy lifestyle can prevent or delay the onset of high BP.

In another clinical case report during dental surgery, Seto et al. evaluated extreme WCHT in 6 patients and reported high systolic blood pressure which was ≥ 200 mmHg immediately before surgery. To control hypertension among participants, the researchers used nitrous oxide inhalation sedation (50–70% nitrous oxide in oxygen) and intravenous

sedation (midazolam (0.04–0.06 mg/kg) or propofol (2 mg/kg/h)). Overall, WCHT was attributed to stress and anxiety during the clinical visit.⁵

In line with the two previous studies, Kimura et al. examined BP measurements in 4990 young outpatients in a dental university hospital. Patients were classified into two BP groups, hypertension and normal. The data were evaluated based on systematic diseases, dental history, and reason for consulting. Based on the obtained results, the systolic BP was significantly higher than the national average. The young people were prone to high BP, probably due to psycho-social history or medical causes affecting BP. WCHT was reported to develop into sustained hypertension. Local anesthetics (i.e., containing epinephrine) can contribute to the elevation of BP.⁶ Thus, screening patients, particularly those with WCHT, during dental procedures in the current pandemic is very important to ensure a safe dental practice.

It has also been reported that hypertension presents a greater risk of developing severe COVID-19. In this regard, Chen et al. evaluated high BP with the severity and mortality rate of 736 patients who tested positive for COVID-19 with the PCR test. They revealed that 220 and 516 patients had hypertension and normal BP, respectively. Of these participants, 17 with hypertension and 15 with normal BP died. The incidence of intensive care treatment was higher in patients with hypertension (12.8%) than in patients without hypertension (5.3%).² Therefore, hypertension is an independent risk factor for the severity and mortality of patients with COVID-19. Consequently, uncontrolled WCHT can lead to stable hypertension. Hence, the management of hypertension, including WCHT, is of great priority.

Kobayashi et al. evaluated the potential relationship between the changes in BP and daily stress. To this end, they included 748 patients (424 men and 324 women) to assess the effect of stress during the COVID-19 pandemic on hypertension. The BP was measured in the office and at home. The results showed that the systolic and diastolic BP were significantly higher during the state of emergency. Also, the prevalence of measuring office BP with the WCHT

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phenomenon was significantly increased. The findings proved that WCHT is related to stress. To prevent cardiovascular events, the clinician should be incorporated into BP management. In this regard, they should pay special attention to WCHT as it needs a treatment different from routine daily clinical practices during the pandemic.³

Telemedicine, including teledentistry, is a safe and effective method to prevent the spread of the COVID-19 pandemic and help detect WCHT through teleconsultation. In this respect, Barochiner et al. included 341 patients to detect white coat uncontrolled hypertension and reported its prevalence at 33.1%. WCHT also exists in teleconsultation and is easy to detect, so its side effects and health expenses can be avoided.^{1,7}

WCHT is also common in adolescents and children. Miyashita et al. evaluated the persistence of WCHT in 89 children. Based on BP measurement, patients were divided into two groups, stable WCHT and intermittent WCHT. The results showed that 80% and 20% of participants had stable and intermittent WCHT, respectively. The majority of the participants with WCHT tended to have abnormal ambulatory BP measurements.⁸ Therefore, it is important to monitor BP measurement and WCHT to prevent hypertension in children, as well as to perform safe medical or dental procedures.

WCHT is a common condition that shows a better association with left ventricular diastolic dysfunction, left atrium enlargement, carotid intima-media thickening and plaque, increased urinary protein excretion, and silent cerebral infarction compared with normotension. Therefore, WCHT is not just limited to the heart and can also damage other organs.⁹ According to the explanations given in this brief letter, WCHT management, including stress and anxiety reduction, should be taken into account to avoid the development of coronary heart disease. This issue is particularly important during the pandemic. In this respect, the correct strategy of a clinician can have a decisive role in screening, diagnosing, and managing WCHT. In addition, further clinical studies regarding WCHT are required to acquire more valid and accurate data on the management of WCHT.

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