Hypertension Research (2022) 45:1405–1407
https://doi.org/10.1038/s41440-022-00974-5

EDITORIAL

Special Issue: Current evidence and perspectives for hypertension management in Asia

Effect of COVID-19 pandemic on seasonal cardiovascular mortality in Japan, and Asian evidence

Kazuomi Kario[1] · Masaki Mogi[2] · Satoshi Hoshide[1]

Received: 27 June 2022 / Accepted: 27 June 2022 / Published online: 5 September 2022

The real-world study of the effect of the COVID-19 pandemic and mild lockdown on the BP in Japan is released in this Asia special issue [1]. The mild lockdown strategy by the Japanese government has been introduced in April 2020. The time-trend change in BP was only slightly increased by 1–2 mmHg for systolic during the COVID-19 pandemic year. In addition, home BP data of the STEP study demonstrated that COVID-19-related anxiety was associated with a short-term increase in morning systolic BP among older hypertensive patients and led to a greater risk of cardiovascular events [2]. In the STEP study, significant seasonal variation of morning home BP with winter peak was found [3]. The seasonal variation with a winter peak in the morning BP is a potential trigger of cardiovascular events, especially in elderly patients [4–6]. Even the increase in the degree of the annual average of BP is slight during the COVID-19 pandemic year, the seasonal variation of BP with an increase from the autumn to the winter may be potentiated by the COVID-19 pandemic, resulting in the increase in winter-onset cardiovascular events.

Figure 1 demonstrated the effect of the COVID-19 pandemic and mild lockdown on the seasonal variation of cardiovascular mortality in Japan. The monthly data of the Current Population Survey Monthly Report from the Ministry of Health, Labor and Welfare in Japan were compared between the same months before and after the first Japanese government state of emergency (on April 7, 2020). In both years, there are significant seasonal variations of all the phenotypes of cardiovascular events with the incidences lower in summer and higher in winter. As shown in the first 6 months of the COVID-19 pandemic (April to September 2020), cardiovascular mortality was lower than in the same months of the previous year (2019). However, after 6 months, along with the colder months (October 2020 to January 2021), cardiovascular mortality was higher in the COVID-19 year. This may be partly because a sedentary lifestyle may shortly decrease the trigger of cardiovascular events, but may worsen the metabolic profile to advance vascular damage, resulting in the increased incidence of cardiovascular mortality in the winter.

The strategy for the COVID-19 pandemic is different among different countries even in Asia. Future studies among different countries to evaluate the impact of different COVID-19 pandemic severity and degree of lockdown seems very important to find out the effect of psychological stress and physical inactivity on hypertension and cardiovascular disease in society. In the era of digital medicine, the COVID-19 pandemic has facilitated home telemedicine for the management of hypertension [7–10]. The home BP-guided approach is getting the major strategy for the management of hypertension [11–13]. The digital personalized approach using home BP telemedicine to the different individual BP variations potentiated in the specific environmental and lifestyle changes by the COVID-19 pandemic seems timely and effective to reduce cardiovascular risk.

There are several interesting papers on Asian evidence in this issue. The trend study of antihypertensive medication in pregnant women demonstrated that nifedipine is the major drug, of which prevalence is >40% in pregnant women in Japan, and this prevalence is increasing in recent years [14]. The use of traditional methyldopa is decreasing. These may be due to the increased number of relativity older pregnant women, who may be difficult to lower BP by methyldopa. The use of amlodipine remains low. The long-term safety data are much needed for the calcium channel blocker (CCB) in the real-world data in Asia, as the CCB is the most popular antihypertensive drug in Asia [15]. The BP-lowering effect of CCB is independent of salt intake and

✉ Kazuomi Kario
kkario@jichi.ac.jp

[1] Division of Cardiovascular Medicine, Department of Medicine, Jichi Medical University School of Medicine, Tochigi, Japan

[2] Department of Pharmacology, Ehime University, Graduate School of Medicine, Ehime, Japan

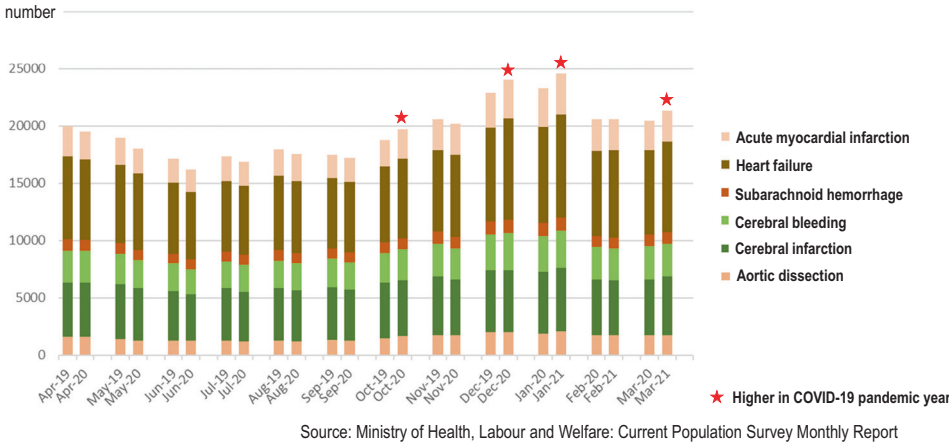

Fig. 1 Effect of COVID-19 pandemic on seasonal cardiovascular mortality in Japan (April 2019 – March 2020 vs. April 2020 – March 2021). On 7 April 2020, the Japanese government declared the first state of emergency, calling on citizens to remain home and refrain from nonessential outings.

salt sensitivity, both of which are higher in the Asian population [16].

The second is the study on the prevalence of primary aldosteronism and its organ damage in the tertiary hospital in Korea [17]. The early detection of primary aldosteronism is important because organ damage as shown in this paper is more advanced beyond BP control. The risk of cardiovascular diseases such as stroke, myocardial infarction, heart failure, and atrial fibrillation is much higher than in patients without primary aldosteronism. As higher salt intake in Asians may accelerate poor BP control and cardiovascular prognosis, Asian data in comparison with western data seem to be important.

The third is that the nationwide study in China demonstrated the U curve between the transportation physical activity and the new onset of hypertension [18]. There are a lot of confounders (psychological and physical commuting stress, physical inactivity using the vehicle for commuting, etc.) included in this unique association, which should be clarified in the future.

Compliance with ethical standards

Conflict of interest The authors declare no competing interests.

Publisher's note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

References

1. Satoh M, Murakami T, Obara T, Metoki H. Time-series analysis of blood pressure changes after the guideline update in 2019 and the coronavirus disease pandemic in 2020 using Japanese longitudinal data. Hypertens Res. 2022. https://doi.org/10.1038/s41440-022-00961-w
2. Zhang S, Zhong Y, Wang L, Yin X, Li Y, Liu Y, et al. STEP Study Group. Anxiety, home blood pressure monitoring, and cardiovascular events among older hypertension patients during the COVID-19 pandemic. Hypertens Res. 2022;45:856–65.
3. Zhang WL, Cai J. STEP to blood pressure management of elderly hypertension: evidence from Asia. Hypertens Res. 2022;45:576–82.
4. Narita K, Hoshide S, Kario K. Seasonal variation in blood pressure: current evidence and recommendations for hypertension management. Hypertens Res. 2021;44:1363–72.
5. Stergiou GS, Palatini P, Modesti PA, Asayama K, Asmar R, Bilo G, et al. Seasonal variation in blood pressure: evidence, consensus and recommendations for clinical practice. Consensus statement by the European Society of Hypertension Working Group on Blood Pressure Monitoring and Cardiovascular Variability. J Hypertens. 2020;38:1235–43.
6. Modesti PA. The shifted focus of interest in the temperature-blood pressure relationship: from load to variability. Hypertens Res. 2021;44:1548–50.
7. Shibata S, Arima H, Asayama K, Hoshide S, Ichihara A, Ishimitsu T, et al. Hypertension and related diseases in the era of COVID-19: a report from the Japanese Society of Hypertension Task Force on COVID-19. Hypertens Res. 2020;43:1028–46.
8. Omboni S, McManus RJ, Bosworth HB, Chappell LC, Green BB, Kario K, et al. Evidence and recommendations on the use of telemedicine for the management of arterial hypertension: an international expert position paper. Hypertension 2020;76:1368–83.
9. Khan NA, Stergiou GS, Omboni S, Kario K, Renna N, Chapman N, et al. Virtual management of hypertension: lessons from the COVID-19 pandemic-International Society of Hypertension position paper endorsed by World Hypertension League and European Society of Hypertension. J Hyperten. 2022. https://doi.org/10.1097/HJH.0000000000003205. PMID: 35579481
10. Kario K, Harada N, Okura A. State-of-the-art rapid review of the current landscape of digital hypertension. Conn Health. 2022;1:46–58.
11. Kario K, Chia YC, Siddique S, Turana Y, Li Y, Chen CH, et al. Seven-action approaches for the management of hypertension in Asia – The HOPE Asia network. J Clin Hypertens (Greenwich). 2022;24:213–23.
12. Kario K. Home blood pressure monitoring: current status and new developments. Am J Hypertens. 2021;34:783–94.
13. Kario K, Shimbo D, Hoshide S, Wang JG, Asayama K, Ohkubo T, et al. The emergence of home blood pressure-guided

management of hypertension based on global evidence. Hypertension. 2019;74:229–36.
14. Kikuchi D, Obara T, Miura R, Suzuki N, Hirakawa H, Josaka R, et al. Antihypertensive drug prescription trends for pregnant women with hypertension in acute hospitals in Japan. Hypertens Res. 2022. https://doi.org/10.1038/s41440-022-00956-7
15. Kario K, Chia YC, Sukonthasarn A, Turana Y, Shin J, Chen CH, et al. Diversity of and initiatives for hypertension management in Asia—why we need the HOPE Asia Network. J Clin Hypertens (Greenwich). 2020;22:331–43. https://doi.org/10.1111/jch.13733. PMID: 31773883
16. Kario K, Park S, Chia YC, Sukonthasarn A, Turana Y, Shin J, et al. 2020 Consensus summary on the management of hypertension in Asia from the HOPE Asia Network. J Clin Hypertens (Greenwich). 2020;22:351–62. https://doi.org/10.1111/jch.13751.
17. Yoon M, Hong N, Ha J, Lee CJ, Ku CR, Rhee Y, et al. Prevalence and clinical characteristics of primary aldosteronism in a tertiary-care center in Korea. Hypertens Res. 2022. https://doi.org/10.1038/s41440-022-00948-7
18. Li R, Zhang S, Li Q, Meng Q, Zu C, Zhang Y, et al. Transportation physical activity and new-onset hypertension: a nationwide cohort study in China. Hypertens Res. 2022. https://doi.org/10.1038/s41440-022-00973-6.