



# Administrative regional variation in cardiovascular risk among patients with gout: implications for the management of cardiovascular complications

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The incidence and prevalence of gout have been rapidly increasing in Korea and worldwide [1,2]. Accordingly, the importance of gout treatment and disease management for the comorbidities accompanying gout is on the rise. Gout is significantly associated with cardiovascular (CV) diseases both epidemiologically and pathophysiologically [3]. Moreover, gout has been identified as an independent risk factor for CV diseases, resulting in higher CV mortality than that in the general population [4,5]. Therefore, addressing gout flare prevention and CV disease risk reduction is crucial when managing patients with gout.

Investigating the risk factors of CV diseases in patients with gout is critical aspect to consider managing CV risk factors. Well-known risk factors for CV diseases include age, hypertension, diabetes mellitus, obesity, dyslipidemia, and chronic kidney disease [6]. Certain gout-related factors have been suggested as risk factors for CV diseases. These factors include disease duration  $\geq 2$  years, oligo- or polyarthritis, serum urate acid levels  $> 9.1$  mg/dL, joint damage, and tophi [5,7]. Another study conducted in Korea with National Health Insurance Service Database suggested old age, current smoking, frequent alcohol intake, high low-density lipoprotein, and diabetes mellitus were risk factors for CV diseases in patients with gout [8]. Geographical disparities, particularly the distinction between rural and urban locations, may also play a role in influence the risk of CV disease. Residents in urban areas tend to have lower CV morbidity and

mortality rates than rural residents [9]. However, research on how regional factors specifically affect the occurrence of CV diseases in patients with gout is limited and remains unclear.

A recent study by Kim et al. [10], published in the previous issue of the *Journal of Rheumatic Diseases*, has provided valuable insights into regional variations in CV risk among patients with gout. This study investigated the variation based on extensive data from nearly all patients newly diagnosed with gout in Korea between August 2019 and January 2021. This study is particularly noteworthy for its focus on geographic differences according to administrative divisions, rather than rural-urban disparities.

The findings indicate that patients with gout in Jeolla/Gwangju had a significantly high risk of myocardial infarction. As for cerebral infarction in patients with gout, residing in Gangwon, Jeolla/Gwangju, and Gyeongsang/Busan/Daegu/Ulsan was associated with a significantly increased risk. Korea has a relatively high racial similarity and minor climate differences. Nevertheless, the findings of this study that the CV risk of patients with gout differs depending on the administrative region have significant implications for the management of patients with gout not only in Korea but also in other countries or regions. These results are expected to serve as valuable data for assessing the CV risk of patients with gout in the regions and devising appropriate treatment plans accordingly.

Several factors must be considered when evaluating this

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study. First, the distinction based on administrative divisions rather than rural-urban differences is a unique aspect of this research and a point that requires careful interpretation. This is because various factors, such as access to health care services and lifestyle habits, could contribute to differences in CV morbidity and mortality between rural and urban areas [9,11], as was shown the incidence of myocardial infarction or cerebral infarction tended to be low overall in Seoul than other regions in this study. Second, the CV risk was notably high in the Jeolla/Gwangju region, and the cause needs to be identified. The difference in CV risk between the Jeolla/Gwangju region and the Gangwon, Chungcheong/Daejeon/Sejong, and Gyeongsang/Busan/Daegu/Ulsan regions cannot be solely explained by rural-urban disparities. Factors such as healthcare utilization, the number of tertiary hospitals and islands, and socioeconomic status may have had an impact. Further research is required to clarify these effects. Third, the potential impact of differences in the management of traditional CV risk factors, such as diabetes mellitus, hypertension, and dyslipidemia, in addition to gout, is worth considering. For instance, fasting blood sugar levels in Jeolla/Gwangju appeared to be higher than those in other regions, and these differences may contribute to CV morbidity. Finally, medications for the treatment of gout could be considered. Since the publication of the CARES study on the CV safety of febuxostat or allopurinol in patients with gout [12], various research findings on the effect of gout treatment drugs have been reported. However, the relationship between CV safety and the drugs used for gout treatment, including febuxostat and allopurinol, remains controversial. Differences in the prescription of gout medication based on region and their potential impact on CV risk cannot be excluded.

In conclusion, patients with gout exhibited different risks of myocardial infarction and cerebral infarction depending on the administrative region. Further evaluation is required to better understand the regional disparities in CV events among patients with gout, considering the aforementioned factors.

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## CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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