Atrial fibrillation (AF) is the most common arrhythmia, particularly in the elderly population, and confers significant effects on morbidity and mortality. Many studies have attempted to define the current incidence and prevalence of AF and project this information onto demographic data to estimate AF-related healthcare delivery and resource allocation needs. In this issue of the Journal, Narita et al. investigate the temporal trends of AF prevalence and rate of oral anticoagulant (OAC) use from 2014 to 2017 in the Tsugaru area using the National Health Insurance Database (NHI). They carefully excluded valvular AF patients and focused on non-valvular AF patients.

This study had many advantages, including the large number of patients surveyed, and specifically analyzed those who needed OACs for prevention of ischemic strokes. As depicted in the Figure, the prevalence of AF in this study was similar to that in the previous studies conducted in Japan and lower than in a study from Germany. The predominant demographic factor increasing the prevalence rates seems to be the aging population, because the rates of comorbidities did not change. Although not reported in this study, a further survey of the incidence rates of AF is warranted. Incident AF is of interest because the incident outcomes are more important than the prevalent conditions when monitoring the effects of newly administered medications and treatments.

Oral anticoagulation is the only treatment to improve survival in patients with AF, and thus one of the important quality indicators. Previous studies have demonstrated a significant gap in the use of AF-related stroke prevention among eligible patients. The previous global registry Atrial Fibrillation Research

Figure. Prevalence of atrial fibrillation (AF) in the Tsugaru area, using sex-specific average rates of AF prevalence, grouped by age. Male: solid line; female: dotted line.
conducted in the warfarin era (RE-LY Atrial Fibrillation Registry) found that only 34% of patients with OAC guideline indications received them. A community-based survey in Japan (Fushimi AF registry) also reported that only 48.5% of eligible patients took warfarin. Recent global and US registries have reported in the direct OACs (DOACs) era, the rate of OAC use in eligible patients has risen up to 60%. Surprisingly, in the present study, 83% of the patients with a CHADS2 score ≥2 were on OACs in 2017, accounting for 60% of the DOACs. They clearly show a trend of a decline in the rate of warfarin use together with an increasing use of DOACs. Still, 17% of eligible patients did not take any OACs, and the reason was probably associated with subjective bleeding risks such as frailty and falls, patient preferences, or contraindications, but these are rarely captured in the NHI data. Although not reported in this study, the rate of overdosing and underdosing the DOAC treatment should be clarified. The underdosing of DOACs did not reduce major bleeding, but rather increased cardiovascular hospitalizations. In addition, we reported that inappropriately reduced DOACs were significantly associated with left atrial appendage thrombi in patients undergoing AF ablation.

Future studies of off-label DOACs and clinical outcomes are warranted.

Researchers and administrators use NHI data to ascertain the disease burden, quality, and variety of care, interventions, and outcomes. To date, a limited number of studies have used the NHI data to assess epidemiology and the clinical issues associated with AF in Japan. The strength of using the NHI data is the large number of patients, but there are several weaknesses. First, the NHI data primarily are not collected for research purposes, so confirmation of integrity is important before using this tool for research. The accuracy of claims-based AF diagnoses and of each stroke risk classification should be validated. Rhythm misinterpretation and misreporting may affect the accuracy of the AF diagnosis. The type of AF has been rarely reported yet also affects the accuracy of AF detection. It is also not clear whether new-onset AF, periperoceptive AF, pacemaker-detected AF, and AF that occurred as part of a hospitalized illness were excluded. Navar-Boggan et al recently examined the accuracy of claims-based AF diagnoses and of each stroke risk classification algorithm using chart reviews from 300 patients. They found that claims-based AF diagnoses had misclassifications in up to 12%, which limits the utility of relying on administrative data alone for a quality assessment. Although challenging and costly, random sampling of representative populations is essential to define the accuracy of a diagnosis, enhance the generalizability and reduce the bias. Second, despite the increased elderly population, participants aged ≥75 years were not included in the current study because they switched to the late-elderly health insurance system. In addition, other health insurance system subscribers were not studied. Finally, the populations studied may not be representative of the general Japanese population. Previously, regional differences in the proportions of AF patients treated with warfarin and their outcomes were shown in Japan using a nationwide AF registry (J-Rhythm Registry).

In summary, this study underscores the potential of the NHI database (Kokuhou Database) for assessing trends in disease burden over time and patterns of care in large populations. It may help policy makers, health authorities, and researchers to understand the prevalence of AF and trends in anticoagulant use to promote informed decisions and raise awareness of this critical disorder.

COI
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