Relationship of clinical complexity domains to management and outcomes of European and Asian patients with atrial fibrillation: a comparison of two regional prospective observational AF registries

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Background: Clinical complexity domains, defined as multimorbidity, frailty and polypharmacy, have been associated with worse clinical outcomes in atrial fibrillation (AF) patients. Differences between European and Asian patients in the prevalence of these clinical complexity domains, the differential prescription of oral anticoagulant (OAC) and risks of clinical outcomes remain unclear.

Purpose: To examine the epidemiology and impact of clinical complexity domains in a large prospective cohort of European and Asian AF patients on OAC prescriptions and the risk of clinical outcomes.

Methods: We studied AF patients derived from two large prospective observational AF registries, conducted in Europe and Asia, on the basis of the same electronic case report form. Multimorbidity and polypharmacy were defined according to the number of comorbidities and drugs at baseline, while frailty was defined according to a 40-items frailty index (FI). Prescription of OAC was assessed at baseline. The primary clinical outcome was the composite of all-cause death and major adverse cardiovascular events (MACEs). Logistic and Cox regression analyses were used to determine associations with domains, and interaction analyses were performed to investigate differences between European and Asian patients.

Results: European patients had a higher burden of all three clinical complexity domains (Multimorbidity: 79.5% European vs 70.2% Asian, p<0.001; Frailty: 21.3% European vs 7.8% Asian, p<0.001; Polypharmacy: 53.9% European vs 36.7% Asian, p<0.001). At baseline, Asian patients with multimorbidity, frailty and polypharmacy were less likely prescribed with OAC than European ones, with the largest difference seen in frail patients (83.0% European vs 76.2% Asian, p=0.003).

After adjustments, being frail was associated with lower OAC prescription (OR 0.45, 95% CI 0.39-0.52), while Asian patients were less likely prescribed OAC than Europeans (OR 0.34, 95% CI 0.25-0.45 vs. OR 0.47, 95% CI 0.40-0.55, Pint=0.037).

Adjusted Cox regression found that in the overall population, clinical complexity domains were associated with a higher risk of composite outcome, all-cause death, and MACEs [Figure 1]. On subgroup analysis, frail Asian patients had a higher risk of composite outcome (Pint=0.003) compared with Europeans [Figure 1]. Similarly, a higher risk of all-cause death was found among Asians [Figure 1] for all the three clinical complexity domains [Figure 1].

Conclusions: Clinical complexity domains have different epidemiological characteristics amongst European and Asian AF patients, being more prevalent in Europeans. These domains differently affect European and Asian patients in terms of OAC use. The presence of clinical complexity domains increases the risk of several clinical outcomes, with Asian patients being burdened with a much higher risk compared to Europeans.
Figure 1