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Thromboembolic risk in infection-related atrial fibrillation: is infection or atrial fibrillation the sinner?

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Introduction: Infection-related atrial fibrillation (AF) has been associated with similar risk of thromboembolic events as AF without a concurrent infection. However, it is unknown whether the increased thromboembolic risk in this patient group is primarily associated with AF or with the infection.

Purpose: We compared type of infection and 1-year outcomes in patients with AF during an infection and in patients with infection without AF.

Methods: By crosslinking data from Danish nationwide registries, AF naïve patients admitted with an infection from 1996–2016 were identified. Patients with infection-related AF (defined as patients who developed AF during their hospital admission with infection) were matched 1:3 on age, calendar year, sex, and type of infection (gastrointestinal infection, pneumonia, urinary tract infection, sepsis, and other infections) with those who had infection without AF. Cumulative incidences of thromboembolic events were calculated using the Aalen Johansen estimator and adjusted hazard ratios (HR) of thromboembolic events and hospital contacts with AF were assessed by multivariable Cox regression analysis comparing those with infection-related AF with those with infection without AF.

Results: The study population comprised 30,711 patients with infection-related AF and 92,133 patients with infection without AF (median age 79 years [interquartile range 71–86] and 47.6% males in both groups). In general, patients with infection-related AF had more concurrent diseases than patients with infection without AF. During the first week after the hospital admission, 9.8% of the patients with infection-related AF and 0.1% of the patients with infection without AF initiated oral anticoagulation therapy. During the first year after the infection, 7.6% of patients with infection-related AF and 4.4% of patients with infection without AF had a thromboembolic event, while 36.1% and 1.8% had a new hospital-contact with AF. Cumulative incidences of thromboembolic events are depicted in the Figure. In the multivariable models, infection-related AF was associated with an increased 1-year risk of thromboembolic events and new hospital contacts with AF compared with infection without AF (HR 2.05, 95% confidence interval (CI) 1.94–2.17 for thromboembolic events and HR 26.06, 95% CI 24.72–27.48 for new AF episodes, respectively).

Conclusion: More than one third of patients with infection-related AF had a new hospital contact with AF during the first year after their infection. Further, infection-related AF was associated with a significantly increased 1-year risk of thromboembolic events compared with infection without AF. Consequently, this study suggests that AF begets AF, even if it presents during an infection.