Stroke Literature Synopses: Clinical Science

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The age, blood pressure, clinical features, duration of transient ischemic attack, diabetes mellitus (ABCD2) clinical risk prediction score is commonly used to triage patients with suspected transient ischemic attack (TIA) for hospital admission (threshold at ≥4) versus outpatient follow-up within 7 days; however, recent studies have called into question its ability to reliably stratify patients at high risk for stroke. To determine sensitivity and specificity of ABCD2 for prediction of stroke risk, Wardlaw et al performed a systematic review and meta-analysis of studies published from 2005 to 2014. They included studies that reported proportions of TIA/minor stroke or mimics, risk factors, and stroke events after incident TIA. Primary outcome was stroke at 7, 90, and ≥90 days.

Twenty-nine studies (n=13766) were included; however, to reduce the potential impact of study methods on heterogeneity, the 10 studies (4443 patients) that provided data on stroke recurrence at both 7 and 90 days were analyzed. The sensitivity of ABCD2 score ≥4 to predict stroke was 86.7% (95% confidence interval [CI], 81.4–90.7) at 7 days and 85.4% (95% CI, 81.1–88.9) at 90 days; specificity was 35.4% (95% CI, 33.3–38.3) at 7 days and 36.2% (95% CI, 34.0–37.6) at 90 days. ABCD2 score did not reliably discriminate those at low versus high risk of early recurrent stroke: 20% of patients with ABCD2 <4 had >50% carotid stenosis or atrial fibrillation (AF) and 35% to 41% of TIA mimics had ABCD2 score ≥4. Furthermore, ABCD2 score was unlikely to have great effect on reducing hospital admissions because two thirds of patients scored ≥4.

Strengths of the study include its comprehensive literature search according to Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines and data assimilation. Limitations include heterogeneity in which clinicians evaluated patients and calculated ABCD2 scores, lack of patient-level data, including medical management, ascertainment bias, retrospective calculation of ABCD2 score in almost half of the patients, and variability in outcome ascertainment. Nevertheless, this study brings to attention the limitations of using ABCD2 to effectively triage patients with TIA. If we rely solely on ABCD2, we run the risk of missing high-risk patients with carotid stenosis or a cardioembolic source, while admitting patients with TIA mimics. Future prospective studies are needed to determine whether a modified risk stratification tool, perhaps incorporating diagnostic studies, may improve predictive power.


Although analyses of administrative datasets and hospital datasets have suggested an increase in AF prevalence, no study has systematically investigated sex-specific temporal trends in AF prevalence, incidence, risk factors, and outcomes in a community-based cohort. Schnabel et al investigated these factors in 9511 participants enrolled in the Framingham Heart Study from 1958 to 2007, stratified by sex (202417 person-years of follow-up).

Over 50 years, age-adjusted prevalence of AF quadrupled in both men (20.4–96.2 cases per 1000 person-years) and women (13.7–49.4), and age-adjusted incidence increased from 3.7 to 13.4 in men and 2.5 to 8.6 in women (P trend<0.0001 for all comparisons). The risk of AF in both sexes doubled with each decade of age; women had a lower overall risk compared with men. When restricting analyses to AF detected by ECG at routine Framingham examinations, the increase in AF prevalence persisted, but the trend in age-adjusted incidence was less pronounced and not significant.

The prevalence of smoking, heavy alcohol use, ECG left ventricular hypertrophy, clinically significant heart murmur, and heart failure declined over time, whereas obesity, diabetes mellitus, and hypertension treatment and control increased. Given stable hazard ratios over time, the population-attributable risk reflected changes in prevalence of risk factors; the population-attributable risk for obesity and diabetes mellitus increased, whereas hypertension decreased. Multivariable-adjusted hazard ratios for stroke...
in 20 years showed a 74% (95% CI, 50–86) decrease from 1958 to 1967 and 1998 to 2007 and an adjusted reduction in mortality of 25% (95% CI, –3 to 46) during the same period.

This is the first study to provide temporal patterns in incidence, prevalence, population-attributable risk factors, and outcome of AF; however, the Framingham population is not racially/ethnically diverse, limiting generalizability. The increased prevalence of AF noted was likely due to enhanced surveillance and reduced mortality; the reduction in stroke was likely due to higher rates of anticoagulation for AF. Although significant advances have been made in reducing rates of smoking, alcohol abuse, and poorly controlled blood pressure, the rising prevalence of diabetes mellitus and obesity may limit reduction in AF incidence.
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