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Clinical Research

Device-Detected Atrial Fibrillation Before and After Hospitalisation for Noncardiac Surgery or Medical Illness: Insights From ASSERT

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See editorial by Aguilar et al., pages 686–689 of this issue.

ABSTRACT

Background: Atrial fibrillation (AF) is often detected during hospitalisation for surgery or medical illness and is often assumed to be due to the acute condition.

Methods: The **A**symptomatic Atrial **F**ibrillation and **S**troke **E**valuation in Pacemaker Patients and the Atrial Fibrillation **R**eduction Atrial Pacing **T**rial (ASSERT) study enrolled patients ≥ 65 years old without AF. Pacemakers or implantable cardioverter-defibrillators recorded

RÉSUMÉ

Contexte : La fibrillation auriculaire (FA) est souvent détectée au cours d'une hospitalisation pour une opération ou un trouble médical et on suppose souvent qu'elle est due à cette affection aiguë.

Méthodes : L'étude ASSERT (***A**symptomatic Atrial **F**ibrillation and **S**troke **E**valuation in Pacemaker Patients and the Atrial **F**ibrillation **R**eduction Atrial **P**acing **T**rial*) a recruté des patients âgés de ≥ 65 ans sans FA. Les stimulateurs cardiaquesou les défibrillateurs

Atrial fibrillation (AF) is often detected for the first time when patients are hospitalised due to an acute physiologic stressor such as surgery or medical illness (eg, infection, pulmonary embolism).[1,2] It is unclear whether AF detected in these settings (AF occurring transiently with stress [AFOTS]) is secondary to reversible triggers (eg, inflammation, ischemia, metabolic disturbances, adrenergic surge, etc) or is a manifestation of a recurring arrhythmia (eg, paroxysmal AF) that has been detected by inpatient electrocardiographic (ECG) monitoring.[1] This distinction is important, because patients in whom AF was due to a reversible cause would not be expected to benefit from chronic oral anticoagulation (OAC) therapy to reduce their risk of ischemic stroke. Previous studies have assessed the long-term prognosis of patients with AFOTS by detecting the recurrence of AF after hospital discharge or identifying the occurrence of adverse events.[2-6] Knowledge of the patient's rhythm history before the stressor would be useful to establish temporality and assess a potential causal relationship between physiologic stress and AFOTS in patients without previously documented AF.

Contemporary implantable cardiac rhythm devices (ie, pacemakers, implantable cardioverter-defibrillators, and loop recorders) capture and store continuous rhythm data; this permits a complete and unbiased review of past arrhythmic episodes. These devices frequently capture episodes of AF without recognisable symptoms.[7,8] This phenomenon has been termed subclinical AF.[9,10] Review of the temporal profile of device-detected AF before and after a physiologic stressor

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device-detected AF. We identified participants who were hospitalised and compared the prevalence of AF before and after hospitalisation.
Results: Among 2580 participants, 436 (16.9%) had a surgical or medical hospitalisation. In the 30 days following a first hospitalisation, 43 participants (9.9%, 95% confidence interval [CI] 7.2%-13.1%) had $>$ 6 minutes of device-detected AF; 20 (4.6%, 95% CI 2.8%-7.0%) had $>$ 6 hours. More participants had AF $>$ 6 minutes in the 30 days following hospitalisation compared with the period 30-60 days before hospitalisation (9.9% vs 4.4%; $P < 0.001$). Similar results were observed for episodes $>$ 6 hours (4.6% vs 2.3%, $P = 0.03$). Roughly half of participants with device-detected AF in the 30 days following hospitalisation had at least 1 episode of the same duration in the 6 months before (50% [95% CI 31.3%-68.7%] for $>$ 6 min; 68.8% [95% CI 41.3%-89.0%] for $>$ 6 h). Those with AF in the 30 days following hospitalisation were more likely to have had AF in the past (adjusted odds ratio [OR] 7.2, 95% CI 3.2-15.8 for $>$ 6 min; adjusted OR 32.6, 95% CI 10.3-103.4 for $>$ 6 h).
Conclusions: The prevalence of device-detected AF increases around the time of hospitalisation for noncardiac surgery or medical illness. About half of patients with AF around the time of hospitalisation previously had similar episodes.

cardioverteurs implantables ont détecté et enregistré des épisodes de FA. Nous avons identifié les participants qui ont été hospitalisés et comparé la prévalence de la FA avant et après hospitalisation.
Résultats : Parmi les 2 580 participants, 436 (16,9 %) ont été hospitalisés pour une intervention médicale ou chirurgicale. Dans les 30 jours suivant la première hospitalisation, 43 participants (9,9 %, intervalle de confiance [IC] à 95 %, 7,2 %-13,1 %) ont eu plus de 6 minutes de FA détectée par un dispositif d'assistance; et 20 participants (4,6 %, IC à 95 %, 2,8 %-7,0 %) en ont eu plus de 6 heures. Un plus grand nombre de participants ont eu une FA $>$ 6 minutes dans les 30 jours suivant l'hospitalisation comparé à la période de 30 à 60 jours avant hospitalisation (9,9 % contre 4,4 %; $P < 0,001$). Des résultats similaires ont été observés pour les épisodes $>$ 6 heures (4,6 % contre 2,3 %, $P = 0,03$). Environ la moitié des participants dont la FA a été détectée par un dispositif dans les 30 jours suivant l'hospitalisation ont eu au moins un épisode de même durée dans les 6 mois précédents l'hospitalisation (50 % [IC à 95 % 31,3 %-68,7 %] pendant $>$ 6 min; 68,8 % [IC à 95 % 41,3 %-89,0 %] pendant $>$ 6 h). Les personnes ayant souffert de FA dans les 30 jours suivant l'hospitalisation étaient plus susceptibles d'avoir déjà souffert de FA (rapport de cotes ajusté [RCA] 7,2, IC à 95 % 3,2-15,8 pendant $>$ 6 min; RCA 32,6, IC à 95 % 10,3-103,4 pendant $>$ 6 h).
Conclusions : La prévalence de la FA détectée par un dispositif d'assistance augmente à peu près au moment de l'hospitalisation pour une chirurgie non cardiaque ou un trouble médical. Environ la moitié des patients souffrant de FA au moment de leur hospitalisation ont déjà eu des épisodes similaires.

may provide insight into the pathophysiology of AF associated with stress. If a high proportion of patients with device-detected AF around the time of stress also have device-detected AF before stress, it is less likely that episodes of AFOTS are directly due to the physiologic stressor and more likely that AFOTS is a manifestation of paroxysmal AF.

The objective of the present study was to use continuous heart rhythm profiles from patients enrolled in the **As**ymptomatic Atrial Fibrillation and **S**troke **E**valuation in Pacemaker Patients and the Atrial Fibrillation **R**eduction Atrial Pacing **T**rial (ASSERT) to compare the prevalence of episodes of device-detected AF before and after physiologic stress events. We hypothesised that the prevalence of device-detected AF would increase around the time of hospitalisation for medical illness or noncardiac surgery. In addition, we hypothesised that device-detected AF around the time of hospitalisation would be associated with prior episodes of device-detected AF.

Methods

The design, rationale, and primary results of ASSERT have been published previously.[8,11] The trial enrolled 2580 patients, aged $\geq$ 65 years and with a history of hypertension who recently underwent implantation of a St Jude Medical (St Paul, MN, USA) dual-chamber pacemaker or implantable cardioverter-defibrillator. Patients were excluded if they had a history of AF or atrial flutter or if they required OAC therapy for any reason. An institutional review committee at each participating center approved the primary study, and participants provided written informed consents. Device electrograms showing AF (atrial rate $>$ 190 beats/min for $>$ 6 min) were adjudicated centrally. These parameters for rate and duration were chosen for consistency with the original ASSERT analysis, where episode durations of $>$ 6 minutes had a false positive rate of 17%.[12] Over a mean follow-up of 2.5 years, device-detected AF of $>$ 6 minutes in duration occurred in $>$ 40% of participants.[8,11] For the present *post hoc* analysis, we examined stored device data including the date, time of onset, and duration of device-detected AF episodes over the follow-up period.[9]

Hospitalisation events

During ASSERT, site investigators recorded the occurrence and date of clinical events that included hospitalisations. Hospitalisations were defined as an overnight stay in hospital. Hospitalisations were reviewed and classified as surgical and medical. Hospitalisations for cardiac surgery and primary cardiac diagnoses (eg, myocardial infarction, heart failure, etc) were excluded from this analysis, because they are thought to have a different physiology and prognosis than hospitalisations for noncardiac reasons.[1] Study participants with a first hospitalisation were the subject of this analysis. The date of a medical or surgical hospitalisation was designated as time "zero." Thus, episodes of device-detected AF happening before and after the initial date of hospitalisation were considered as occurring in negative and positive time, respectively.

Statistical analyses

We conducted statistical analyses with the use of SAS 9.4 software (SAS Institute, Cary, NC). All analyses were limited to patients with complete rhythm data in the time window of

the analysis. P values were 2 sided with significance level at $P < 0.05$. Normalities of continuous variables were examined by visual inspection of histograms with fitted normal curve and Q-Q plot and by assessment of skewness and kurtosis. Comparisons of continuous baseline variables between patients with and without device-detected AF in the 30 days following the hospitalisation were performed by means of the t test or Wilcoxon rank sum test as appropriate. Categoric variables between groups were compared with the use of chi-square test or Fisher exact test, depending on the expected cell count.

Our primary analysis was designed to assess the association of physiologic stress on the occurrence of device-detected AF. We assessed this graphically by plotting the prevalence of AF with accompanying 95% confidence intervals (CIs) in 3-month intervals before and after the date of hospitalisation. To assess this statistically, we compared the proportion of patients with at least 1 episode of AF in the 30, 90, and 180 days following hospitalisation vs a period of equal duration before the hospitalisation. For this comparison, we blanked the 30 days immediately before hospitalisation due to uncertainty in defining the precise onset of illness. Therefore, we compared the periods from days −60 to −30, days −120 to −30, and days −210 to −30, respectively. We performed this comparison for episodes of $>$ 6 minutes, $>$ 6 hours, and $>$ 24 hours and separately for a first medical and surgical hospitalisation with the use of the McNemar test for paired data. For this analysis, we included only study participants with full heart rhythm data over the corresponding time window.

Our secondary analysis was designed to assess whether patients with device-detected AF during physiologic stress had a history of device-detected AF. In a nested case-control analysis, we compared the incidence of device-detected AF in the period that preceded a hospitalisation between patients with and without device-detected AF in the 30 days following the hospitalisation. As in our primary analysis, we blanked the 30 days immediately before hospitalisation. Specifically, we compared the 6-month period occurring from 210 to 30 days before hospitalisation. The association between prior device-detected AF and device-detected AF during physiologic stress was analyzed by means of a logistic regression model adjusting for CHA_2DS_2-VASc score. We reported adjusted odds ratios and corresponding 95% CIs. We performed this analysis using device-detected AF durations of $>$ 6 minutes, $>$ 6 hours, and $>$ 24 hours in the overall population as well as in the medical and surgical hospitalisation subgroups. For this analysis, we included only study participants with full heart rhythm data over the corresponding time window.

Results

Among 2580 patients enrolled in ASSERT, 436 (16.9%) had at least 1 documented hospitalisation and complete heart rhythm data for the primary analysis: 257 had only 1 hospitalisation, 112 had 2 hospitalisations, 47 had 3 hospitalisations, 15 had 4 hospitalisations, and 5 had 5 hospitalisations. Among 436 patients with a hospitalisation, 13 (3.0%) had their first-ever episode of device-detected AF $>$ 6 minutes in the 30 days following their first hospitalisation. Among those patients, 8 (61.5%) had at least 1 more episode of AF $>$ 6 minutes during the remainder of study follow-up. Only 3 (0.69%) out of the 436 participants had AF reported on surface ECG within 30 days following the first hospitalisation. Supplemental Table S1 compares baseline characteristics of patients who were and were not hospitalised during the follow-up period. Median time from enrollment to first hospitalisation was 432 days, and median time from the first hospitalisation to end of follow-up was 563 days.

Table 1 presents the characteristics of patients with and without device-detected AF $>$ 6 minutes within 30 days of hospitalisation. The median CHA_2DS_2-VASc score did not differ between the 2 groups (4.0; interquartile range 3.0-5.0; $P = 0.90$), nor did any other baseline characteristic.

Figure 1 shows the 30-day prevalence of device-detected AF $>$ 6 minutes, $>$ 6 hours, and $>$ 24 hours according to time from hospitalisation, respectively. Among 436 patients with a first medical or surgical hospitalisation, the incidence of device-detected AF $>$ 6 minutes in the 30 days following the date of hospitalisation was 9.9% (95% CI 7.2%-13.1%), the incidence of device-detected AF $>$ 6 hours was 4.6% (95% CI 2.8%-7.0%), and the incidence of device-detected AF $>$ 24 hours was 3% (95% CI 1.6%-5.0%). Among 336 participants with a first medical hospitalisation, the incidence of device-detected AF $>$ 6 minutes in the 30 days following the date of hospitalisation was 10.1% (95% CI 7.1%-13.9%), and among 212 participants with a first hospitalisation for noncardiac surgery, the incidence of device-detected AF $>$ 6 minutes was 7.5% (95% CI 4.4%-12.0%).

Supplemental Table S2 presents the prevalence of device-detected AF $>$ 6 minutes within 30 days after each recurrent hospitalisation, up to the fourth hospitalisation.

Table 2 presents the proportion of patients with device-detected AF in the 30 days before and after the date of a first medical or noncardiac surgical hospitalisation. In 30-day sampling windows, a significantly higher proportion of patients had device-detected AF after hospitalisation compared with before hospitalisation. However, this difference was not significant when comparing 90- and 180-day before-and-after sampling windows.

Table 3 presents the association between the incidence of device-detected AF within 30 days after hospitalisation and an earlier history of device-detected AF. The majority of patients with device-detected AF in the 30 days following hospitalisation had at least 1 episode of device-detected AF of the same duration in the 6 months before hospitalisation. Patients with device-detected AF in the 30 days following hospitalisation were also significantly more likely to have had an earlier history of device-detected AF than those who did not have device-detected AF in the 30 days following hospitalisation. The magnitude of the association increased with longer episode durations and was consistent when only a first medical or surgical hospitalisation was considered.

Compared with patients who did not have device-detected AF within 30 days of hospitalisation, patients who had device-detected AF within 30 days after hospitalisation were more likely to have AF detected by surface ECG during subsequent follow-up (8.1%/y vs 1.2%/y, hazard ratio [HR] 6.6, 95% CI 1.9-22.4; $P = 0.003$). However, there were no significant differences in thromboembolic events (0.0%/y vs 1.4%/y), hospitalisation for heart failure (7.2%/y vs 4.0%/y, HR 1.9,

Table 1. Baseline characteristics of patients according to the presence of device-detected AF > 6 minutes within 30 days after hospitalisation

Characteristic	All (n = 436)	Device-detected AF following hospitalisation (n = 43)	No device-detected AF following hospitalisation (n = 393)	*P* value
Age, y	76.4 ± 6.7	76.8 ± 7.8	76.3 ± 6.5	0.699
Female	184 (42.2)	17 (39.5)	167 (42.5)	0.709
Heart failure	89 (20.4)	10 (23.3)	79 (20.1)	0.626
Hypertension	436 (100.0)	43 (100.0)	393 (100.0)	—
Coronary arterial disease	152 (34.9)	15 (34.9)	137 (34.9)	0.998
Peripheral arterial disease	31 (7.1)	6 (14.0)	25 (6.4)	0.107
Diabetes mellitus	145 (33.3)	11 (25.6)	134 (34.1)	0.260
Previous stroke	34 (7.8)	4 (9.3)	30 (7.6)	0.762
Previous transient ischemic attack	31 (7.1)	6 (14.0)	25 (6.4)	0.107
CHA_2DS_2-VASc score	4.2 ± 1.3	4.3 ± 1.6	4.2 ± 1.3	0.757
CHA_2DS_2-VASc score	4.0 (3.0-5.0)	4.0 (3.0-5.0)	4.0 (3.0-5.0)	0.936
BMI, kg/m^2	27.6 ± 5.2	26.9 ± 4.2	27.7 ± 5.2	0.291
LVEF, %	55.7 ± 13.5	56.5 ± 9.9	55.6 ± 13.8	0.735
Device indication				
SA node disease with or without AV node disease	195 (44.7)	21 (48.8)	174 (44.3)	0.568
AV node disease without SA node disease	203 (46.6)	21 (48.8)	182 (46.3)	0.752
ACEi/ARB	328 (75.2)	32 (74.4)	296 (75.3)	0.897
β-Blocker	203 (46.6)	18 (41.9)	185 (47.1)	0.515

Results are presented as mean ± SD, or median (interquartile range [IQR]). Only patients who had complete heart rhythm data from −60 days to +30 days were considered.

ACEi, angiotensin-converting enzyme inhibitor; AF, atrial fibrillation; ARB, angiotensin receptor blocker; AV, atrioventricular; BMI, body mass index; LVEF, left ventricular ejection fraction; SA, sinoatrial.

95% CI 0.6-5.4; $P = 0.3$), or all-cause mortality (17.8%/y vs 9.7%/y, HR 1.8, 95% CI 1.0-3.5; $P = 0.063$).

Discussion

We observed device-detected AF in ~10% of patients in the 30 days following a hospitalisation for a medical or noncardiac surgical reason. This is within the range observed in earlier studies of clinical AF,[1,2,13,14] but is a more accurate estimate because implanted pacemakers facilitated complete and unbiased ascertainment of AF for all participants. Although device-detected AF was more frequent following hospitalisation, a majority of patients who developed device-detected AF had at least 1 similar episode of AF in the period before hospitalisation. This pattern suggests that physiologic stress may be an acute trigger for AF. However, it also suggests that these episodes of AF are often a manifestation of a condition that is likely to recur.

We found that the prevalence of device-detected AF > 6 minutes in the 30 days following the date of hospitalisation was 9.9% with 95% CI 7.2%-13.1%. This remained consistent up to the fourth hospitalisation, with point estimates ranging from 7.8% to 10.4%. These estimates are within the expected range shown in our systematic review, where the incidence of new-onset AF detected by surface ECG ranged from 1% to 44% overall and from 1% to 22% in patients who were not being cared for in an intensive care

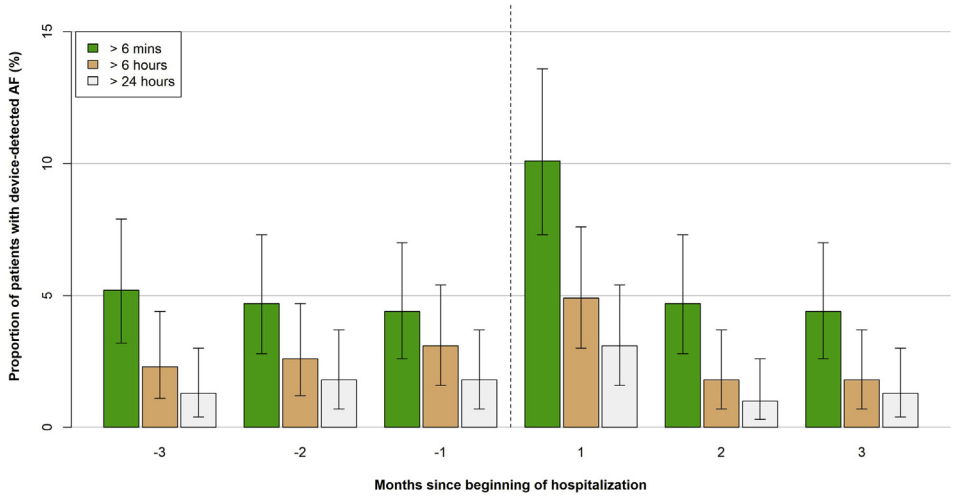

Figure 1. Prevalence of episodes of device-detected atrial fibrillation before and after hospitalisation for noncardiac surgery or acute medical illness. Only 386 participants were considered, who had complete heart rhythm data from −90 to +90 days. **Error bars** represent 95% confidence intervals of the proportions.

Table 2. Proportion of patients with device-detected atrial fibrillation (AF) before and after the first medical or noncardiac surgical hospitalisation

Episode duration	n*	Participants with device-detected AF, n (%)			*P* value†
		After but not before hospitalisation	Both before and after hospitalisation	Before but not after hospitalisation	
30 days before and after hospitalisation‡	436				
> 6 min		33 (7.6)	10 (2.3)	9 (2.1)	< 0.001
> 6 h		14 (3.2)	6 (1.4)	4 (0.9)	0.031
> 24 h		9 (2.1)	4 (0.9)	3 (0.7)	0.146
90 days before and after hospitalisation§	358				
> 6 min		32 (8.9)	17 (4.8)	21 (5.9)	0.131
> 6 h		13 (3.6)	8 (2.2)	12 (3.4)	0.841
> 24 h		9 (2.5)	3 (0.8)	10 (2.8)	> 0.999
180 days before and after hospitalisation‖	269				
> 6 min		26 (9.7)	21 (7.8)	24 (8.9)	0.777
> 6 h		10 (3.7)	13 (4.8)	15 (5.6)	0.317
> 24 h		9 (3.4)	7 (2.6)	10 (3.7)	> 0.999

*Only patients who had full heart rhythm data over the corresponding time windows were considered.
†McNemar test for paired data.
‡Post-hospitalisation interval starts day 0 (ie, days 0-30); pre-hospitalisation interval ends day −30 (ie, days −60 to −30).
§Post-hospitalisation interval starts day 0 (ie, days 0-90); pre-hospitalisation interval ends day −30 (ie, days −120 to −30).
‖Post-hospitalisation interval starts day 0 (ie, days 0-180); pre-hospitalisation interval ends day −30 (ie, days −210 to −30).

unit.[2] However, only 0.69% of the present 436 study participants had AF detected on surface ECG within 30 days after the first hospitalisation. This highlights the value of a continuous implantable monitor to permit precise, accurate, and unbiased measurements of AF pattern and burden. Statistical testing showed that the prevalence of device-detected AF was higher in the 30 days after hospitalisation than during a similar period before hospitalisation. However, when wider intervals (90 and 180 days) were compared, device-detected AF occurred with similar frequency before and after hospitalisation. Taken together, these findings show a consistent increase in the prevalence of device-detected AF in the period immediately following hospitalisation.

In this analysis, roughly half of patients with device-detected AF following hospitalisation, particularly those with longer episodes, had device-detected AF in the period preceding hospitalisation. This burden was higher than those without device-detected AF following hospitalisation. This relationship was more pronounced in patients with longer episodes of device-detected AF, raising the question of whether these stress-associated episodes may indicate underlying paroxysmal AF**.** The proportion of patients with a history of AF was upwards of 50%. These estimates are congruent with previous reports for AF detected by surface ECG following stress: recurrence rates have ranged from 42% to 68% up to 5 years after medical illness and from 37% to 68% up to 5 years after noncardiac surgery.[2,3,5,15] We observed a similar pattern with 180-day rates of post-hospitalisation AF recurrence in patients without any AF before the index hospitalisation.

What remains unknown is whether an episode of device-detected AF occurring during hospitalisation for medical illness or noncardiac surgery confers the same long-term prognosis as paroxysmal AF detected clinically and would be expected to respond to evidence-based therapies for paroxysmal AF, particularly OAC. A recent systematic review by our group found that perioperative AF is associated with an increased long-term risk of stroke, but that the absolute risk was somewhat lower than might be expected for typical AF patients.[16-18] Individual studies have reported similar findings

Table 3. Association of device-detected atrial fibrillation (AF) in the 30 days following a first hospitalisation with device-detected AF in the 6 months before hospitalisation,* n (%)

	Device-detected AF following hospitalisation	No device-detected AF following hospitalisation	Adjusted OR† (95% CI)	*P* value
Any hospitalisation				
Prior device-detected AF > 6 min	15/30 (50.0)	37/302 (12.3)	7.16 (3.24-15.84)	< 0.001
Prior device-detected AF > 6 h	11/16 (68.8)	20/316 (6.3)	32.64 (10.30-103.4)	< 0.001
Prior device-detected AF > 24 h	6/10 (60.0)	13/322 (4.0)	36.31 (9.03-146.0)	< 0.001
Medical hospitalisation				
Prior device-detected AF > 6 min	12/24 (50.0)	30/232 (12.9)	6.72 (2.76-16.33)	< 0.001
Prior device-detected AF > 6 h	9/13 (69.2)	19/243 (7.8)	26.72 (7.51-95.15)	< 0.001
Prior device-detected AF > 24 h	5/8 (62.5)	13/248 (5.2)	29.93 (6.40-139.9)	< 0.001
Surgical hospitalisation				
Prior Device-detected AF > 6 min	6/12 (50.0)	20/164 (12.2)	7.30 (2.12-25.11)	0.002
Prior device-detected AF > 6 h	3/6 (50.0)	12/170 (7.1)	13.94 (2.44-79.57)	0.003
Prior device-detected AF > 24 h	2/5 (40.0)	7/171 (4.1)	16.15 (2.25-115.8)	0.006

*Defined as 210 to 30 days before hospitalisation.
†Adjusted for CHA_2DS_2-VASc score.

in patients with medical illness.[5,15,17,19,20] We propose 3 plausible explanations for the intermediate risk of stress-associated AF (ie, higher risk than no AF, but lower risk than typical AF). First, different phenotypes of patients with stress-associated AF may exist—one where stress precipitates AF and it is likely to recur, and another where AF is uniquely and directly caused by the stressor and unlikely to recur.[1] Second, stress-associated AF may represent a low burden form of AF, associated with a lower absolute risk of stroke.[21-24] Third, AF occurring at the time of physiologic stress may not be causally related to adverse events such as stroke, and the association is explained by shared risk factors and comorbidities. Two ongoing large clinical trials are aimed at identifying optimal antithrombotic strategies in patients with device-detected AF,[25,26] and one pilot trial is assessing OAC for patients with perioperative AF (clintrials.gov identifier: NCT03968393). While we await these data, long-term ambulatory ECG performed following resolution of the acute illness may be a useful strategy to identify patients with recurrent AF who might benefit from OAC.[6]

Strengths

The principal strength of this analysis is the continuous unbiased recording of cardiac rhythm over a prolonged follow-up period. This is, to the best of our knowledge, the first report examining the association between device-detected AF and physiologic stress. A committee of blinded experts adjudicated all episodes of device-detected AF.

Limitations

The key weakness of this *post hoc* study is its observational design. The total number of patients remains small, and precludes subgroup analyses based on subtypes of medical and noncardiac surgical hospitalisations. Analyses conducted over 90- and 180-day time windows may not be statistically significant owing to a lack of statistical power compared with the analyses conducted over 30-day time windows. Because this study is based on patients aged 65 years and older with hypertension and a pacemaker or ICD, the participants in the study have a higher likelihood of underlying heart disease than the general population. Thus, our findings may not be generalisable to younger patients without a pacemaker or ICD who have AF detected by surface ECG.

Conclusion

In patients without a history of AF who have a pacemaker or implantable cardioverter-defibrillator, device-detected AF is common around the time of hospitalisation for medical illness or noncardiac surgery. We observed a spike in the occurrence of device-detected AF around the time of hospitalisation, but roughly one-half of patients with AF around the time of hospitalisation had at least 1 similar episode in the past. These findings suggest that a large number of patients with AF detected around the time of a hospitalisation have a chronic or recurring pattern of AF.

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Disclosures

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Supplementary Material

To access the supplementary material accompanying this article, visit the online version of the *Canadian Journal of Cardiology* at www.onlinecjc.ca and at https://doi.org/10.1016/j.cjca.2020.11.012.