DIAGNOSTIC AND PROGNOSTIC ROLE OF IMPLANTABLE LOOP RECORDERS IN PATIENTS WITH CRYPTOGENIC ISCHEMIC STROKE OR TRANSIENT ISCHEMIC ATTACK

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ABSTRACT

Objective: To evaluate the diagnostic yield and clinical impact of implantable loop recorders (ILRs) in patients with cryptogenic ischemic stroke (CS) or transient ischemic attack (TIA) in a real-world, tertiary care setting. **Methods:** We conducted a retrospective observational study of consecutive patients with CS or TIA who underwent ILR implantation between 2019 and 2025 across five cardiology centres in Athens, Greece. Paroxysmal atrial fibrillation (PAF) and other arrhythmias were recorded, and anticoagulation initiation and ischemic stroke recurrence were assessed. **Results:** Among 352 patients, PAF was detected in 63 (17.9%) during ILR monitoring. The median time from stroke onset to PAF detection was 190.5 days (IQR: 64–558.8). Following PAF diagnosis, 60 patients (95.2%) initiated oral anticoagulation, primarily with apixaban (n=28) and rivaroxaban (n=21). Recurrent ischemic stroke was documented in 8 patients (2.2%) of the overall cohort, with no significant differences observed between patients with and without ILR-detected PAF. In addition to AF, ILRs identified clinically significant sinus pauses in 5 patients (1.4%), all of whom subsequently received permanent pacemakers. **Conclusion:** ILRs enabled the detection of PAF and other clinically significant arrhythmias in patients with CS or TIA, facilitating timely therapeutic interventions. The observed high rate of anticoagulation initiation and low stroke recurrence support the clinical utility of ILRs in secondary prevention. These findings reinforce the broader diagnostic role of ILRs beyond PAF detection and underscore their integration into standard post-stroke evaluation pathways.

Keywords: implantable loop recorder, cryptogenic ischemic stroke, paroxysmal atrial fibrillation, sinus pause

ΔΙΑΓΝΩΣΤΙΚΟΣ ΚΑΙ ΠΡΟΓΝΩΣΤΙΚΟΣ ΡΟΛΟΣ ΤΩΝ ΕΜΦΥΤΕΥΣΙΜΩΝ ΚΑΤΑΓΡΑΦΕΩΝ ΡΥΘΜΟΥ ΣΕ ΑΣΘΕΝΕΙΣ ΜΕ ΚΡΥΠΤΟΓΕΝΕΣ ΙΣΧΑΙΜΙΚΟ ΑΓΓΕΙΑΚΟ ΕΓΚΕΦΑΛΙΚΟ ΕΠΕΙΣΟΔΙΟ Η ΠΑΡΟΔΙΚΟ ΙΣΧΑΙΜΙΚΟ ΕΠΕΙΣΟΔΙΟ

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Περίληψη

Σκοπός: Η αξιολόγηση της διαγνωστικής αξίας και της κλινικής χρησιμότητας των εμφυτεύσιμων καταγραφέων ρυθμού (implantable loop recorders, ILR) σε ασθενείς με κρυπτογενές ισχαιμικό αγγειακό εγκεφαλικό επεισόδιο (ΙΑΕΕ) ή παροδικό ισχαιμικό αγγειακό εγκεφαλικό επεισόδιο (ΠΙΕ) στο πλαίσιο της καθημερινής κλινικής πράξης ενός τριτοβάθμιου νοσοκομείου. **Μέθοδοι:** Διεξήχθη αναδρομική μελέτη παρατήρησης σε διαδοχικούς ασθενείς με κρυπτογενές ΙΑΕΕ ή ΠΙΕ, οι οποίοι υποβλήθηκαν σε εμφύτευση ILR κατά την περίοδο 2019–2025 σε πέντε καρδιολογικά κέντρα στην Αθήνα. Οι ασθενείς παρακολουθήθηκαν για ανίχνευση επεισοδίων παροξυσμικής κολπικής μαρμαρυγής (ΠΚΜ) όπως και άλλων αρρυθμιών, ενώ αξιολογήθηκαν ως προς την έναρξη αντιπηκτικής αγωγής και την εμφάνιση υποτροπιαζόντων ΙΑΕΕ. **Αποτελέσματα:** Μεταξύ των 352 ασθενών, ανιχνεύθηκε ΠΚΜ σε 63 (17,9%) ασθενείς κατά τη διάρκεια παρακολούθησης με ILR. Η διάμεση χρονική περίοδος από την εμφάνιση του ΙΑΕΕ/ΠΙΕ έως την ανίχνευση της ΠΚΜ ήταν 190,5 ημέρες (IQR: 64–558,8). Μετά τη διάγνωση της ΠΚΜ, 60 ασθενείς (95,2%) ξεκίνησαν από του στόματος αντιπηκτική αγωγή. Υποτροπιάζον ΙΑΕΕ σημειώθηκε σε 8 ασθενείς (2,2%) της συνολικής κοορτής χωρίς να διαπιστωθούν σημαντικές διαφορές μεταξύ των υποομάδων με ανιχνευθείσα και μη ανιχνευθείσα ΠΚΜ. Πέραν της ΠΚΜ, οι ILR εντόπισαν κλινικά σημαντικές παύσεις φλεβοκομβικού ρυθμού σε 5 ασθενείς (1,4%), οι οποίοι όλοι υποβλήθηκαν σε εμφύτευση μόνιμου βηματοδότη. **Συμπέρασμα:** Οι ILR επέτρεψαν την ανίχνευση επεισοδίων ΠΚΜ και άλλων κλινικά σημαντικών αρρυθμιών σε ασθενείς με κρυπτογενές ΙΑΕΕ ή ΠΙΕ, διευκολύνοντας την έγκαιρη θεραπευτική παρέμβαση. Τα ευρήματα αυτά ενισχύουν τον ευρύτερο διαγνωστικό ρόλο των ILR πέρα από την ανίχνευση ΠΚΜ, επισημαίνοντας την ένταξή τους σε καθιερωμένα πρωτόκολλα αξιολόγησης μετά από ΙΑΕΕ.

Λέξεις-κλειδιά: εμφυτεύσιμος καταγραφέας ρυθμού, κρυπτογενές ισχαιμικό αγγειακό εγκεφαλικό επεισόδιο, παροξυσμική κολπική μαρμαρυγή, φλεβοκομβική παύση

INTRODUCTION

Implantable loop recorders (ILRs) have emerged as valuable diagnostic tools across a range of clinical scenarios, particularly following the publication of recent European Society of Cardiology (ESC) guidelines on the management of ventricular arrhythmias, sudden cardiac death prevention, and cryptogenic stroke (CS) evaluation.[1,2] Additionally, recent European Stroke Organisation (ESO) guidelines highlight the role of ILRs in the secondary prevention of cryptogenic stroke.[3] Among the most robust indications for ILR use are patients with CS or transient ischemic attack (TIA) in whom initial diagnostic investigations, including 24-hour Holter heart rhythm monitoring, transthoracic and transoesophageal echocardiography and vascular imaging (with the modality left at the discretion of the treating physician) fail to reveal an underlying cause.[4–6]

ILRs enable prolonged cardiac rhythm surveillance, with current devices lasting up to five years.[7] Their early use in patients with unexplained syncope or palpitations is well-established, improving diagnostic precision and guiding therapeutic decisions.[7] In CS populations, ILRs have proven effective in detecting paroxysmal atrial fibrillation (PAF), with reported rates approaching 30% in selected cohorts.(8–11) Timely PAF identification allows for early anticoagulation, a cornerstone of secondary stroke prevention.[12–14]

Beyond PAF detection, ILRs can uncover bradyarrhythmias such as sinus pauses and atrioventricular block.[15,16] These findings may necessitate prompt pacemaker implantation to prevent recurrent syncope or cerebral hypoperfusion.[15,16] Thus, ILRs serve a broader diagnostic role, extending beyond embolic risk stratification to the identification of actionable conduction system disorders.

Despite growing evidence from randomised-controlled clinical trials (RCTs), real-world data on the diagnostic yield and clinical impact of ILRs across diverse healthcare settings remain limited. The present observational study aims to assess the performance of ILRs in a large, unselected cohort of patients with CS or TIA. Specifically, we evaluate the diagnostic contribution of ILRs in arrhythmia detection and their influence on subsequent therapeutic management in routine clinical practice.

Methods

Population

We retrospectively evaluated patients with CS or TIA treated at the "Attikon" University Hospital (Athens, Greece) between 2019 and 2025. All included patients had undergone ILR implantation as part of their diagnostic workup. Cryptogenic stroke was defined using the Trial of Org 10172 in Acute Stroke Treatment (TOAST) criteria, and after excluding patients with incomplete evaluation, as previously described.[17–22] All patients underwent at least a 12-lead ECG, a transthoracic echocardiogram or transoesophageal echocardiogram and a 24h Holter heart rhythm monitoring prior to ILR implantation.[12–16] All patients received neuroimaging with brain computed tomography (CT) and / or magnetic resonance imaging (MRI) and vascular imaging with the modality left at the discretion of the treating physician (cervical duplex ultrasound, transcranial Doppler, CT angiography and /or magnetic resonance [MR] angiography). All demographics and vascular risk factors were prospectively recorded for all patients using standard definitions, as previously described.[12–16] Stroke severity on admission was assessed with the use of the National Institute of Health Stroke Scale (NIHSS) score by certified neurologists.[12–16]

Procedure of Heart Rhythm Monitoring

In the year 2019, we implemented the use of implantable cardiac monitoring (ICM) devices (Reveal LINQ; Medtronic) for the prolonged outpatient cardiac monitoring of patients with CS or TIAs and at least one negative 24-hour Holter-ECG during hospitalisation. This strategy was applied regardless of baseline risk stratification scores. All devices were implanted subcutaneously under local anaesthesia in the left chest region by experienced cardiologists in our institution and four other cardiac electrophysiology clinics in tertiary care hospitals in the Athens Metropolitan area ("Hippokrateion" University Hospital, "Attikon" University Hospital, 401 General Military Hospital of Athens, Army Equity Fund Hospital of Athens, and General Hospital of Athens "G. Gennimatas"). ICMs were programmed with a validated algorithm for detection of AF episodes lasting at least 2 minutes.[23] Total time in AF was calculated as the sum of each individual AF episode for patients with multiple episodes during monitoring. In addition to PAF, other clinically relevant arrhythmias, namely sinus pauses, were also detected and documented. Experienced cardiologists who were blinded to the clinical outcomes of our patients reviewed all ICM recordings in the five participating cardiac electrophysiology clinics.

Outcomes of Interest

All patients were followed for up to 3 years after hospital discharge at the stroke outpatient clinic of our institution during outpatient or telephone visits, as dictated by their clinical status and at the discretion of the treating vascular neurologist, as previously described.[18,19] PAF was defined by the presence of a confirmatory ECG, Holter, or ICM recording. If PAF was detected, oral anticoagulation with either a new oral anticoagulant (NOAC) or a vitamin K antagonist (VKA) was initiated. Ischemic stroke recurrence was defined as a new neurological event recorded at least 24 hours after hospital discharge and validated by neuroimaging, as previously described.[18,19]

The primary outcome of interest was the rate of PAF detection in patients of the whole cohort receiving ILR implantation. Secondary outcomes of interest included: (1) the percentage of patients with anticoagulation initiation after ILR implantation, (2) percentage of patients with ischemic stroke recurrence after ILR implantation, (3) detection of sinus pauses after ILR implantation.

Statistical analysis

Categorical variables are summarised using counts and percentages, with 95% confidence intervals (CI) calculated for all baseline characteristics and key outcomes. For continuous data, normality was assessed using the Shapiro–Wilk test. Normally distributed variables are reported as mean ± standard deviation (SD), and skewed variables as median and interquartile range (IQR). Group comparisons for categorical variables were performed using chi-square or Fisher's exact test, as appropriate. Continuous variables were compared using the unpaired ***t*** test or Mann–Whitney ***U*** test, as indicated. All tests were two-tailed, and a p value <0.05 was considered statistically significant. Statistical analyses were conducted using R software (version 4.4.2; R Foundation for Statistical Computing, Vienna, Austria).

Ethics Approval

The study followed all national and international principles of good clinical and research practice and was approved by the ethics committee of the coordination institution ("Attikon" University Hospital, National and Kapodistrian University of Athens, Athens, Greece; identification number 2219/23-03-2017). Informed consent for participation in the study was obtained from all patients or guardians of patients. The data sets generated during and analysed during the current study are available from the corresponding author upon reasonable request.

RESULTS

A total of 352 patients underwent ILR placement following an index cerebrovascular event, including CS or TIA. Of these, 320 patients (90.9%) experienced an acute CS, while 32 patients (9.1%) pre-

Table 1. Baseline characteristics.

	All patients (n=352)	PAF patients (n=63)	Non PAF patients (n=289)	p-value
Age, years (median [IQR])	64.0 [57.0–72.0]	67.0 [60.0–76.0]	62.0 [56.0–69.0]	<0.001
Male sex, n (%)	232 (65.9%)	42 (66.6%)	190 (65.9%)	0.91
NIHSS on admission (median [IQR])	3 [1–6]	2 [1–5]	3 [1–6]	0.92
Hypertension, n (%)	251 (71.3%)	54 (85.7%)	198 (68.7%)	0.01
Diabetes mellitus, n (%)	79 (22.4%)	6 (9.5%)	53 (18.3%)	0.008
Dyslipidaemia, n (%)	182 (51.7%)	41 (65.1%)	174 (60.4%)	0.49
CHA_2DS_2-VASc Score (median [IQR])	3.0 [2.0–4.0]	3.0 [2.0–4.0]	3.0 [2.0–4.0]	0.003
HAVOC Score (median [IQR])	4.0 [2.0–4.0]	4.0 [3.0–5.0]	2.0 [2.0–4.0]	0.01
C_2HEST Score (median [IQR])	2.0 [1.0–3.0]	3.0 [2.0–4.0]	1.0 [1.0–2.0]	<0.001
Congestive heart failure, n (%)	10 (2.8%)	4 (6.3%)	6 (2.1%)	0.49
History of stroke/TIA, n (%)	95 (27.0%)	24 (38.1%)	81 (28.1%)	0.11
History of coronary artery disease, n (%)	41 (11.6%)	11 (17.5%)	36 (12.5%)	0.29
History of peripheral vascular disease, n (%)	17 (4.8%)	4 (6.3%)	16 (5.5%)	0.80
Left atrial enlargement, n (%)	80 (22.7%)	22 (34.9%)	60 (20.8%)	0.01
Dilated cardiomyopathy, n (%)	7 (2.0%)	4 (6.3%)	3 (1.2%)	0.06
History of antiplatelet pretreatment, n (%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	-

NIHSS: National Institutes of Health Stroke Scale; IQR: interquartile range; TIA: transient ischemic attack.

sented with a TIA. The median age of the cohort was 64 years (IQR: 57–72), with a range of 18 to 87 years (**Table 1**). The majority of patients were male (n = 232; 66%; **Table 1**).

The median NIHSS score among the included patients was 3 (IQR: 1–6), ranging from 0 to 22 (**Table 1**). The median time from stroke onset to ILR implantation was 29.5 days (IQR: 14.8–65.8; **Table 2**). Among all patients in the cohort, the median HAVOC score (hypertension, age ≥75 years, valvular disease, obesity, congestive heart failure, and coronary artery disease) was 4 (IQR: 2–4), the median CHA_2DS_2-VASc score (congestive heart failure, hypertension, age ≥75 years, diabetes mellitus, prior stroke or TIA, vascular disease, age 65–74 years, and sex category [female]) was 3 (IQR: 2–4), and the median C_2HEST score (coronary artery disease, chronic obstructive pulmonary disease, hypertension, elderly age ≥75 years, systolic heart failure, and thyroid disease) was 2 (IQR: 1–3), reflecting an overall elevated risk profile for recurrent cardioembolic events.[24–26]

Primary Outcome

PAF was detected in 63 patients (17.9%; 95%CI: 14.0%–21.8%) via ILR monitoring (**Figure 1**). Among these patients, the median number of AF episodes was 1 (IQR: 1–2), with a maximum of 138 episodes recorded (**Table 2**). The median time from stroke onset to AF detection was 190.5 days (IQR: 64–558.8), and the median interval from ILR implantation to PAF detection was 125.5 days (IQR: 23–499.8) (**Table 2**). The median total cumulative duration of AF episodes

Table 2. Outcomes of the Cohort Study.

	All patients (n=352)	**PAF patients (n=63)**	**Non PAF patients (n=289)**	**p-value**
Total follow-up (months, median, range)	15 (0.5–36)	17 (7-32)	12 (6–28)	Not applicable
PAF, n (%)	63 (17.9%)	63 (100%)	0 (0)	Not applicable
Number of PAF episodes (median [IQR])	1 [1–2]	1 [1–2]	Not applicable	Not applicable
Time from stroke to PAF detection, days (median [IQR])	190.5 [64.0–558.8]	190.5 [64.0–558.8]	Not applicable	Not applicable
Time from ILR implantation to PAF detection, days (median [IQR])	125.5 [23.0–499.8]	125.5 [23.0–499.8]	Not applicable	Not applicable
Duration of PAF, seconds (median [IQR])	1200 [360–14010]	1200 [360–14010]	Not applicable	Not applicable
Anticoagulant Initiation	60 (17.1%)	60 (95.2%)	0 (0%)	Not applicable
Recurrent ischemic stroke n (%)	8 (2.2%)	3 (4.8%)	5 (1.7%)	0.14
Sinus pauses, n (%)	5 (1.4%)	3 (4.8%)	2 (0.7%)	0.10
Time from ILR implantation to sinus pause detection, days (median [IQR])	87 [34.0–192.0]	87 (60.0-192.0)	82 (34.0-130.0)	0.60
Permanent pacemaker placement, n (%)	5 (1.4%)	3 (4.8%)	2 (0.7%)	0.10

AF: atrial fibrillation; ILR: implantable loop recorder; IQR: interquartile range; PAF: paroxysmal atrial fibrillation.

per patient was 1,200 seconds (IQR: 360–14,010 seconds), indicating considerable variability in arrhythmic burden across the cohort (**Table 2**). Among patients with documented PAF, the median HAVOC score was 4 (IQR: 3–5), the median CHA_2DS_2-VASc score was 3 (IQR: 2–4), and the median C_2HEST score was 3 (IQR: 2–4), reflecting an overall elevated risk profile for recurrent cardioembolic events.[24–26]

Among the 289 patients (82.1%; 95%CI: 77.7%–85.9%) with no-PAF detection, the median HAVOC score was 2 (IQR: 2–4), the median CHA_2DS_2-VASc score was 3 (IQR: 2–4), and the median C_2HEST score was 1 (IQR: 1–2). These values were lower compared to patients with documented PAF, indicating a comparatively lower estimated risk for cardioembolic events in the non-PAF subgroup (**Table 1**).

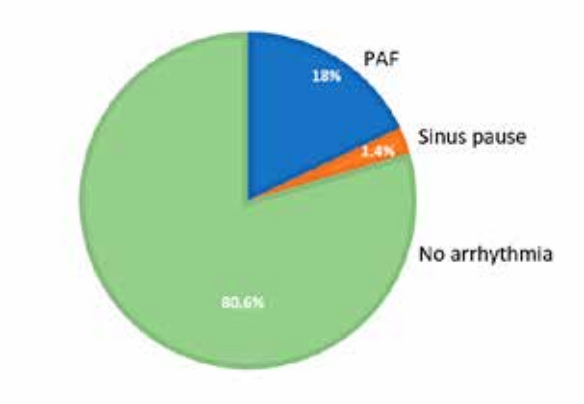
Secondary Outcomes

Following PAF detection, oral anticoagulation was initiated in the majority of patients. The most frequently prescribed agents were apixaban (n=28), rivaroxaban (n=21) and dabigatran (n=7), while acenocoumarol was used in 4 patients. Only three patients declined therapy (**Figure 2**). No oral anticoagulation therapy was initiated in the non-PAF subgroup.

During follow-up, recurrent ischemic stroke was documented in 3 patients (4.8%; 95% CI: 0%–10%) with PAF who had initiated anticoagulation therapy (**Table 2**). Among patients without ILR-detected PAF, recurrent ischemic stroke occurred in 5 of 288 individuals (1.7%; 95% CI: 0.5%–3.9%).

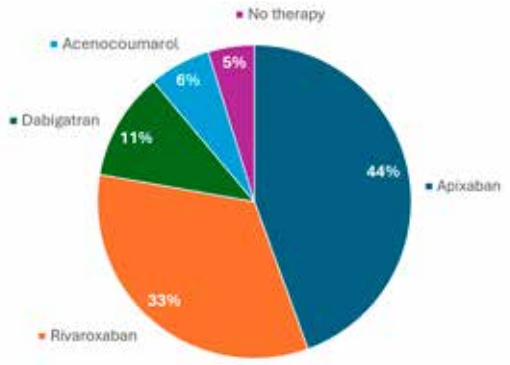
In addition to PAF detection, ILR monitoring identified clinically significant bradyarrhythmias in 5 pa-

Figure 1. Arrhythmias detected in the overall stroke cohort, including atrial fibrillation, sinus pauses, and absence of arrhythmia.



PAF: paroxysmal atrial fibrillation.

Figure 2. Distribution of anticoagulant therapy among patients with ILR-detected atrial fibrillation.



tients of the total cohort (1.4%; 95%CI: 0.5%–3.2%), all of whom exhibited sinus pauses (**Table 2**). The median interval from ILR implantation to sinus pause detection was 87 days (IQR: 34.0–192.0; Table 2) Cardiologic evaluation confirmed symptomatic or high-risk bradyarrhythmias, and all five individuals subsequently underwent permanent pacemaker implantation (**Table 2**).

DISCUSSION

In this cohort of patients with CS or TIA, ILR monitoring identified PAF in 17.9% of cases. The median time from stroke onset to AF detection was 190.5 days, highlighting the limitations of short-term monitoring strategies. In addition to PAF, ILRs revealed other clinically relevant arrhythmias, namely sinus pauses. Most patients diagnosed with PAF were promptly initiated anticoagulation, primarily with NOACs such as apixaban and rivaroxaban. Notably, the overall recurrent ischemic stroke rate in this population was low (4.8%), suggesting a beneficial impact of early rhythm diagnosis and secondary prevention.

Our findings are consistent with major RCTs that have demonstrated the superiority of ILRs over conventional heart rhythm monitoring in detecting PAF. The CRYSTAL-AF trial reported a 12.4% detection rate of PAF at 12 months in the ILR group, compared to 2.0% with standard 24-hour Holter monitoring.[9] Similarly, the PER DIEM trial showed PAF detection rates of 15.3% with ILR versus 4.7% using a 30-day external loop recorder.[27] The LOOP study identified PAF in 31.8% of patients monitored with ILRs, though it did not demonstrate a statistically significant reduction in stroke incidence.[28] In our real-world dataset, the detection rate of 17.9% aligns well with these RCTs.

The majority of patients with ILR-detected PAF in our cohort were initiated anticoagulation shortly after diagnosis, with a preference for NOACs such as rivaroxaban and apixaban. These therapeutic decisions were promptly made following ILR notification and likely contributed to the low observed rate of recurrent ischemic events (4.8%) during follow-up. This is in line with prior studies such as CRYSTAL-AF and ASSERT, as well as our recently published meta-analysis, which demonstrated that the early initiation of anticoagulation following device-detected AF can significantly reduce the risk of stroke.[9,29,30] Importantly, although the LOOP trial did not show a statistically significant reduction in stroke incidence despite a high AF detection rate with ILRs, the study population differed substantially from our cohort.[28] The LOOP trial population included older adults with cardiovascular risk factors, including 262 with prior stroke not limited to CS.[28]

Risk stratification is a cornerstone of both secondary prevention and diagnostic yield optimisation in patients with CS.[31] The CHA_2DS_2-VASc score remains the standard tool for estimating thromboembolic risk and guiding anticoagulation decisions once PAF is diagnosed.[26,32] In our cohort, this score was consistently elevated among patients initiated on anticoagulation, indicating high baseline risk. Beyond treatment guidance, predictive models such as the HAVOC and C_2HEST scores have emerged as valuable tools to estimate the likelihood of incident AF, and may help identify patients who would benefit from prolonged heart rhythm monitoring using ILRs.[24,25] The HAVOC score has been validated in post-stroke populations. In one multicentre study, a HAVOC score ≥4 was associated with a >25% risk of new-onset AF over three years.[24] Similarly, the C_2HEST score has shown strong predictive accuracy in both general and stroke cohorts.[25] A C_2HEST score ≥4 confers a 2–3 fold increased risk of AF development compared to lower-risk patients.[25] These scores can be instrumental not only in selecting individuals for ILR implantation but also in triaging resource allocation in settings with limited device availability. Importantly, both scoring systems incorporate risk factors that are

prevalent in CS patients, allowing their use in routine clinical practice.[24,25]

In addition to detecting PAF, ILRs contributed valuable diagnostic information regarding other cardiac abnormalities within our cohort. Notably, they facilitated the identification of clinically significant bradyarrhythmias, particularly sinus pauses. This underscores the broader diagnostic potential of ILRs in uncovering actionable arrhythmic substrates unrelated to PAF.[33] Prior studies have similarly demonstrated that ILRs can detect other rhythm disturbances, including high-grade atrioventricular block, asystole, and significant sinus pauses, particularly in patients with CS or unexplained syncope.[34] The prevalence of such findings is non-negligible; for instance, the PER DIEM and ASSERT-II trials have documented bradyarrhythmias in 2–5% of ILR-implanted populations.[27,29] The inclusion of ILRs in poststroke workup therefore not only aids in thromboembolic risk assessment, but also enables timely diagnosis and management of bradycardic arrhythmias, including those requiring device-based therapy. These findings advocate for a comprehensive interpretation of ILR recordings that extends beyond AF detection alone.

Our findings support the integration of ILRs into standardised stroke care pathways, particularly in patients with CS who remain in sinus rhythm after initial monitoring. Multidisciplinary collaboration between stroke neurologists and cardiac electrophysiologists is essential to interpret ILR findings and implement appropriate treatment. As digital health tools and artificial intelligence evolve, personalized algorithms may help optimise the selection of candidates for ILR implantation and improve long-term outcomes.

This study has several limitations. First, its retrospective and observational design inherently introduces the possibility of selection bias and unmeasured confounders. Furthermore, the absence of a control group receiving conventional cardiac monitoring limits direct comparisons regarding the incremental diagnostic yield and impact on recurrent stroke prevention.

Prospective studies are warranted to validate the prognostic relevance of arrhythmias other than AF, such as sinus pauses, in post-stroke populations. Moreover, defining actionable thresholds for subclinical arrhythmias detected by ILRs will be crucial for guiding therapeutic decisions. In conclusion, our real-world data affirm the diagnostic and therapeutic utility of ILRs in patients with CS or TIA, not only for the detection of occult AF but also for uncovering a broader spectrum of cardiologic complications with implications for individualised care.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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