

Article

Impact of New-Onset Atrial Fibrillation in Critically Ill Patients—A Retrospective Study

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Abstract

Background and Aim: New-onset atrial fibrillation (NOAF) is a common condition in critically ill patients, yet the evidence on optimal NOAF management and outcomes is limited. This study evaluates the impact of management strategies on short- and long-term outcomes in patients who develop NOAF during their intensive care unit (ICU) stay. **Methods:** A retrospective, single-centre study was conducted of all patients with NOAF admitted in a multidisciplinary ICU between 2020 and 2023. The clinical characteristics and outcomes of the patients were collected. The endpoints included the characterisation of management strategies, short-term outcomes during ICU stays (including atrial fibrillation [AF] recurrence), and long-term outcomes after discharge (including AF recurrence and a composite of death or cardiovascular hospitalisation). **Results:** A total of 160 patients developed NOAF (mean age 69.5 ± 11.8 years; 63% male). Most had cardiovascular comorbidities and high illness severity, with frequent mechanical ventilation (87%) and vasopressor (89%) use. Rhythm-control strategies—predominantly amiodarone—were associated with lower in-hospital AF recurrence (OR 0.28, $p = 0.044$) and a numerical reduction in post-discharge recurrence. Anticoagulation was initiated in 45% of patients and continued at discharge in 44%, without major bleeding. ICU and in-hospital mortality were 33% and 43%, respectively. During a median follow-up of 10 (range 0–56) months, post-ICU discharge AF recurrence occurred in 34% of patients initially discharged in sinus rhythm. Anticoagulation at discharge was not associated with recurrence, while rhythm control in the ICU and absence of in-hospital recurrence strongly predicted reduced post-discharge recurrence ($p < 0.001$). Nine patients required readmission, mainly for heart failure or ischaemic stroke. The composite long-term outcome occurred in 24 patients (27%). **Conclusions:** Post-ICU discharge AF recurrence after NOAF was common. Early rhythm-control strategies were associated with lower in-hospital and post-discharge AF recurrence, and individualised anticoagulation appeared safe in this observational cohort. These findings support proactive post-ICU monitoring and risk-adapted management strategies.



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Keywords: anticoagulation; arrhythmia management; intensive care; new-onset atrial fibrillation; outcome

1. Introduction

New-onset atrial fibrillation (NOAF) is the most common arrhythmia in critically ill patients, occurring in approximately 4–16% of intensive care unit (ICU) admissions [1–3], and is defined as the first documented episode of atrial fibrillation (AF) in patients without a prior history of the arrhythmia [3]. According to the latest European Society of Cardiology (ESC) guidelines, NOAF is considered trigger-induced, occurring in close temporal association with a precipitating and potentially reversible factor [4].

Several risk factors for NOAF have been identified in patients in the ICU, including advanced age, surgical or trauma admission, sepsis, use of inotropes or vasopressors, renal replacement therapy, and invasive mechanical ventilation [5,6]. Beyond these traditional risk factors, the development of NOAF frequently reflects greater illness severity and multiorgan dysfunction, which may influence both short- and long-term outcomes [7].

While AF is a well-established risk factor for stroke, heart failure, and mortality in non-ICU populations [3,4], critically ill patients represent a distinct population with unique pathophysiological and management challenges. The evidence regarding optimal strategies for rate versus rhythm control [3,4], anticoagulation [4], and the long-term prognostic significance of NOAF remains limited. Conventional thromboembolic risk scores, such as CHA₂DS₂-VASc, have not been validated in ICU populations, and current recommendations rely largely on observational studies and expert consensus [1,8]. A comprehensive understanding of these aspects is essential for optimising both acute management and long-term outcomes in this high-risk population.

This study aimed to characterise patients in the ICU who developed NOAF, describe contemporary management strategies, and evaluate their short- and long-term outcomes over a 10-month follow-up.

2. Materials and Methods

2.1. Study Population and Design

This retrospective, single-centre study included all adult patients admitted to the multidisciplinary ICU at Hospital de Santa Maria, Lisbon, Portugal, between January 2020 and December 2023, who developed NOAF during their ICU stay. NOAF was defined as the first documented episode of AF in patients without prior history of the arrhythmia, detected by continuous cardiac monitoring or 12-lead electrocardiography [4].

Patients with known AF or admitted for neurocritical care were excluded.

2.2. Data Collection and Outcomes

Patient demographics, comorbidities, reasons for ICU admission, laboratory and haemodynamic parameters, and details of ICU management were systematically collected from electronic medical records. Illness severity at admission was assessed using the Simplified Acute Physiology Score II (SAPS II). Follow-up data after hospital discharge were obtained from hospital records, outpatient clinic visits, and the national electronic health database. Post-discharge AF recurrence was defined as any documented episode of AF identified in these records based on 12-lead electrocardiography, telemetry, Holter monitoring, or rhythm documentation during hospital readmission or outpatient follow-up.

The study endpoints included the characterisation of management strategies (rhythm vs. rate control, antiarrhythmic therapy, anticoagulation), short-term outcomes during ICU stays (AF recurrence, complications, length of stay), and long-term outcomes after discharge (AF recurrence, hospital admissions, and survival).

2.3. Statistical Analysis

Continuous variables are presented as mean $\pm$ standard deviation or median (interquartile range) and categorical variables as counts and percentages.

Univariate analyses were initially conducted to explore the associations between baseline characteristics and outcomes of interest, including AF recurrence, choice of management strategy, and anticoagulation use. Variables with a p -value < 0.10 in univariate analyses were considered for inclusion in multivariable logistic or linear regression models to identify independent predictors, with adjustment for illness severity and organ dysfunction. A two-sided p -value < 0.05 was considered statistically significant. Analyses were performed using IBM SPSS Statistics version 26 (IBM Corp., Armonk, NY, USA).

2.4. Ethical Considerations

This study was conducted in accordance with the principles of Good Clinical Practice and the Declaration of Helsinki. Given the retrospective design, all data were anonymised prior to analysis.

3. Results

A total of 4139 subjects (62.9% male; mean age 61.5 ± 16.5 years; main reasons for hospital admission were respiratory failure due to infection [21.1%] and cardiovascular failure due to sepsis [13.0%]) were admitted to the ICU during the study period. Of these, 160 patients developed NOAF, with an estimated incidence of 3.9%. The baseline clinical characteristics of the patients with NOAF are summarised in Table 1.

Table 1. Baseline demographic and clinical characteristics of patients who developed new-onset atrial fibrillation.

Patients with NOAF ($n = 160$)	
Demographic characteristics	
Age, years	69.54 ± 11.84
Male sex	101 (63)
Past medical history	
Hypertension	107 (67)
Diabetes	56 (35)
Dyslipidaemia	64 (40)
Obesity	34 (21)
Chronic kidney disease	22 (14)
Hyperthyroidism	2 (1)
Coronary artery disease	21 (13)
Prior cardiac surgery—CABG	5 (3)
Heart failure	
HFpEF	10 (6)
HFrEF	6 (4)
Pulmonary disease	
COPD/emphysema	16 (10)
Asthma	7 (4)
Obstructive sleep apnoea	10 (6)
Smoking status	
Never	117 (73)
Former	23 (14)
Current	20 (13)
CHA ₂ DS ₂ -VASc	3.04 ± 1.73
Previous medication	
Beta blocker	48 (30)
Calcium channel blocker	2 (1)
Antiarrhythmic	6 (4)

Data are presented as n (%) or mean $\pm$ standard deviation. Abbreviations: NOAF, new-onset atrial fibrillation; HFpEF, heart failure with preserved ejection fraction; HFrEF, heart failure with reduced ejection fraction; COPD, chronic obstructive pulmonary disease; CABG, coronary artery bypass graft; CHA₂DS₂-VASc, congestive heart failure, hypertension, age ≥ 75 years, diabetes, stroke/TIA, vascular disease, age 65–74 years, sex category (female).

3.1. Baseline Characteristics and ICU Course

The mean age of the patients with NOAF was 69.5 ± 11.8 years, and 63% were male. Cardiovascular comorbidities were common, particularly hypertension (67%) and diabetes (35%), and the median CHA₂DS₂-VASc score was 3.0 (IQR 2.0–4.0). Most admissions were medical (85%), mainly due to sepsis or septic shock. Illness severity was high, with a median SAPS II of 46.0 (IQR 34–61).

During their ICU stay, most patients required invasive mechanical ventilation (87%) and vasopressor support (89%), with frequent renal replacement therapy (24%). Laboratory markers of inflammation, cardiac injury, and renal dysfunction were elevated (Tables 1 and 2).

Table 2. Characteristics, ICU course, interventions, and laboratory findings in patients with new-onset atrial fibrillation.

Patients with NOAF (<i>n</i> = 160)	
ICU admission	
COVID-19 infection	56 (35)
Reason for admission	
Surgical	
Thoracic	24 (15)
	1 (4)
ICU admission	
Abdominal	23 (96)
Medical	
Sepsis/Septic shock	136 (85)
Hypovolaemic shock	99 (73)
Obstructive shock	8 (6)
Cardiogenic shock	3 (2)
Acute HF with pulmonary oedema	8 (6)
Stroke	2 (1)
Trauma	8 (6)
Organ dysfunction	
Cardiovascular dysfunction	127 (79)
Respiratory dysfunction	142 (89)
Renal dysfunction	107 (67)
Hematologic dysfunction	38 (24)
Hepatic dysfunction	53 (33)
No organ dysfunction	2 (1)
Severity score	
SAPS II	50.38 $\pm$ 20.15
Laboratory	
Haemoglobin (g/L)	11.76 $\pm$ 2.44
Creatinine (mg/dL)	1.2 (0.83–2.10)
Urea (mg/dL)	62 (42–103)
eGFR (mL/min/1.73 m ²)	56.73 $\pm$ 30.32
CRP (mg/dL)	12.05 (3.64–24.78)
PCT (ng/mL)	1.08 (0.26–13.05)
Troponin T (ng/L)	29.5 (15.01–101.75)
NTproBNP (pg/mL)	3438 (395–15,133)
TSH (uU/mL)	1.07 (0.48–1.76)
FT4 (ng/dL)	1.13 (0.89–1.36)
Electrolyte disturbance	
pH	7.35 (7.27–7.43)
Hyponatremia	51 (32)
Hypernatremia	34 (21)
Hypokalaemia	32 (20)
Hyperkalaemia	29 (18)

Table 2. Cont.

Patients with NOAF (<i>n</i> = 160)	
Hypomagnesaemia	2 (1)
ICU stay	
Interventions	
Invasive ventilation	139 (87)
Days on invasive ventilation	6 (2–15)
Renal replacement therapy	39 (24)
Vasopressors	143 (89)
Inotropes	15 (9)
Bronchoscopy	13 (8)
Central venous catheter	151 (94)
Arterial line	159 (99)
Laboratory	
Haemoglobin (g/dL, min)	8.3 (7.2–10.0)
Creatinine (mg/dL, max)	1.76 (1.10–2.83)
Urea (mg/dL, max)	108 (68–166)
eGFR (mL/min/1.73 m ² , min)	36.5 (20–62)
CRP (mg/dL, max)	26.1 (15.38–36.38)
PCT (ng/mL, max)	4.2 (0.76–23.60)
Troponin T (ng/L, max)	85 (32–131)
NTproBNP (pg/mL, max)	4432 (1160–24,657)

Continuous variables are presented as mean $\pm$ SD or median (IQR) depending on distribution. Categorical variables are presented as counts and percentages, *n* (%). Abbreviations: NOAF, new-onset atrial fibrillation; ICU, intensive care unit; COVID-19, coronavirus disease 2019; HF, heart failure; SAPS II, Simplified Acute Physiology Score II; eGFR, estimated glomerular filtration rate; CRP, C-reactive protein; PCT, procalcitonin; NTproBNP, N-terminal pro-B-type natriuretic peptide; TSH, thyroid-stimulating hormone; FT4, free thyroxine.

3.2. Management Strategies and Anticoagulation

Among the patients with NOAF, rhythm control was the predominant strategy (85%), mainly with amiodarone (79%), either alone or combined with electrical cardioversion (18%). Isolated cardioversion was rare (2%), and the median time to sinus rhythm was 8 h (IQR 1–24). Rate control was used in 8% of patients (mainly beta-blockers or digoxin), and 8% were managed conservatively (Tables 3 and 4). The choice of rhythm versus rate control strategy was not significantly associated with illness severity, including the SAPS II score, vasopressor use, or need for mechanical ventilation (all *p* > 0.05).

Table 3. Management strategies among patients with new-onset atrial fibrillation.

Patients with NOAF (<i>n</i> = 160)	
Anticoagulation	72 (45)
Enoxaparin	62 (86)
Unfractionated heparin	10 (14)
VKA	0 (0)
DOAC	0 (0)
Rhythm control strategy	136 (85)
ECV	3 (2)
Amiodarone	108 (79)
Amiodarone + ECV	25 (18)
Rate control strategy	12 (8)
Beta-blocker	9 (75)
Digoxin	3 (25)
Observation strategy	12 (8)

Data are presented as counts and percentages, *n* (%). Percentages are calculated relative to the total NOAF cohort. Abbreviations: NOAF, new-onset atrial fibrillation; ECV, electrical cardioversion; VKA, vitamin K antagonist; DOAC, direct oral anticoagulant.

Table 4. Management strategies among patients with new-onset atrial fibrillation according to post-ICU discharge atrial fibrillation recurrence.

Management Strategy	Total (<i>n</i> = 103)	Recurrence (<i>n</i> = 34)	No Recurrence (<i>n</i> = 69)
Anticoagulation	49 (48)	15 (44)	34 (49)
Enoxaparin	41 (84)	15 (100)	26 (77)
Unfractionated heparin	8 (16)	0 (0)	8 (24)
Rhythm control strategy	86 (84)	21 (62)	65 (94)
ECV	3 (3)	2 (6)	1 (1)
Amiodarone	81 (79)	19 (56)	63 (91)
Amiodarone + ECV	1 (1)	0 (0)	1 (1)
Rate control strategy	11 (11)	10 (29)	1 (1)
Beta-blocker	9 (82)	7 (70)	1 (100)
Digoxin	3 (27)	3 (30)	0 (0)
Observation strategy	6 (6)	3 (9)	3 (4)

Data are presented as counts and percentages, *n* (%). Data are shown for patients discharged in sinus rhythm, stratified by post-ICU AF recurrence (recurrence vs. no recurrence). Percentages are calculated relative to the total NOAF cohort. Abbreviations: ECV, electrical cardioversion.

Anticoagulation was initiated during the ICU stay in 45%, mostly with low-molecular-weight heparin (86%). Patients receiving anticoagulation were more likely to have hypertension ($p = 0.008$) and less haematologic dysfunction ($p < 0.001$). Higher SAPS II scores, NT-proBNP, and creatinine, and lower pH at admission were associated with a lower likelihood of anticoagulation (all $p < 0.05$). The choice of rhythm versus rate control as a strategy was not associated with anticoagulation initiation ($p = 0.328$). On multivariate analysis, hypertension independently predicted anticoagulation need (OR 3.72, 95% CI 1.38–10.01, $p = 0.009$), whereas a higher SAPS II reduced its likelihood (OR 0.96 per point, 95% CI 0.94–0.99, $p = 0.002$); the CHA₂DS₂-VASc score was not associated with anticoagulation need (3.1 ± 1.5 vs. 3.0 ± 1.9 , $p = 0.724$).

At ICU discharge, among the survivors, 44% ($n = 47$) of the patients remained on anticoagulation, 37% ($n = 40$) on beta-blockers, and 14% ($n = 15$) on amiodarone. Anticoagulation at discharge was more frequent in patients admitted for medical reasons (50% vs. 7%, $p = 0.002$), with lower SAPS II scores (40.89 ± 10.78 vs. 50.64 ± 18.51 , $p = 0.005$), higher admission haemoglobin (12.72 ± 2.10 vs. 11.37 ± 2.36 , $p = 0.002$) and minimum haemoglobin during the ICU stay (9.64 ± 2.26 vs. 8.39 ± 1.71 , $p = 0.002$), higher admission pH (7.38 ± 0.10 vs. 7.33 ± 0.12 , $p = 0.026$), preserved renal function (minimum eGFR 55.27 ± 30.21 vs. 40.85 ± 24.69 , $p = 0.048$), or absence of organ failures (cardiovascular, renal or hematologic, all $p < 0.05$).

Patients who received anticoagulation during their ICU stay or were managed with rate control were also more likely to be discharged on anticoagulation (65% vs. 23%, $p < 0.001$; 67% vs. 39%, $p = 0.03$). Age, chronic kidney disease, pre-existing heart failure, CHA₂DS₂-VASc score, and AF recurrence during the ICU stay were not associated with anticoagulation at discharge.

3.3. AF Recurrence and Outcomes

In-hospital AF recurrence occurred in 52% of the patients ($n = 81$) initially restored to sinus rhythm, while four patients remained in persistent AF. Recurrence was more frequent with rate control than rhythm control strategies (17/23 [74%] vs. 64/133 [48%], $p = 0.022$), and rhythm control was independently associated with lower recurrence (OR 0.28, 95% CI

0.08–0.97; $p = 0.044$). Higher SAPS II scores increased recurrence risk (OR 1.02 per point, 95% CI 1.00–1.05; $p = 0.018$).

Other factors associated with recurrence included older age (72.27 ± 10.43 vs. 66.71 ± 12.63 , $p = 0.003$), renal dysfunction (58.6% vs. 38.6%, $p = 0.009$), higher admission creatinine (1.80 ± 1.17 vs. 1.38 ± 0.89 , $p = 0.007$), lower baseline eGFR (36.20 ± 23.57 vs. 50.41 ± 30.45 mL/min/1.73 m², $p < 0.001$), and vasopressor use (55.4% vs. 23.5%, $p = 0.013$). In-hospital AF recurrence was similar between patients who received anticoagulation during ICU stay and those who did not ($p = 0.955$).

ICU mortality among patients with NOAF was 33%, and in-hospital mortality was 43%, compared with an overall ICU mortality of 23% in our centre during the study period.

Patients with NOAF had a median ICU stay of 7 days (IQR 4–19), a median hospital stay of 8 days (IQR 4–21), and required a median of 6 days of invasive mechanical ventilation. Short-term ICU complications included pulmonary embolism ($n = 13$, 8%), type II myocardial infarction ($n = 8$, 5%), major bleeding ($n = 6$, 4%), stroke ($n = 6$, 4%), and heart failure ($n = 2$, 1%). Initiation of anticoagulation during ICU stay was associated with lower in-hospital mortality (33% vs. 51%, $p = 0.024$) without increasing major bleeding; however, this finding should be interpreted with caution given the observational design and the likelihood of confounding by indication.

During a median follow-up of 10 months (range 0–56), post-ICU discharge AF recurrence occurred in 34% of patients initially discharged in sinus rhythm (34/103), with no difference according to anticoagulation at discharge (33% vs. 36%, $p = 0.77$). The rhythm control strategy in the ICU and the absence of in-hospital AF recurrence strongly predicted lower recurrence during follow-up (24% vs. 82%, $p < 0.001$; 17% vs. 60%, $p < 0.001$, respectively). Anticoagulation at discharge was not associated with major bleeding during follow-up (2% vs. 3%, $p = 0.72$).

Hospital readmissions were infrequent (9%) and were primarily related to heart failure ($n = 5$, including two episodes triggered by AF with rapid ventricular response) or ischaemic stroke ($n = 3$, including one cardioembolic event), with a median time to readmission of 526 days (range 215–891). The composite outcome of post-hospital-discharge all-cause death or cardiovascular hospitalisation occurred in 24 patients (24/91, 27%), with a median time to first event of 9.5 months. Long-term survival among patients with NOAF was 99% at 1 month and 88% at 6 months.

4. Discussion

In this single-centre cohort of critically ill patients, NOAF occurred in 3.9% of ICU admissions. Affected patients predominantly had high illness severity and often required mechanical ventilation and vasoactive support. Although the observed incidence was lower than previously reported (10.3–24.1%) [9–11], these findings highlight the substantial burden of arrhythmic complications in the ICU setting. The lower incidence observed in our cohort may reflect differences in patient populations, such as the exclusion of neurocritical care patients and the relatively low proportion of surgical patients due to reduced elective surgical activity during the COVID-19 pandemic; the single-centre design with a limited sample size; and heterogeneity in NOAF definitions and monitoring practices across studies.

NOAF not only reflects severe illness but also represents a potential therapeutic target, as its occurrence often precipitates haemodynamic instability and complicates the management of underlying organ failure [3]. Patients who developed NOAF were typically older and had multiple cardiovascular comorbidities, consistent with the profile of “at-risk” patients in the general AF population [8,12].

The main findings of our study were (1) rhythm control strategies, predominantly using amiodarone alone, were associated with lower in-hospital AF recurrence and a numerical, non-significant reduction in post-ICU discharge recurrence; (2) anticoagulation during hospitalisation and at discharge was not associated with an increased risk of major bleeding, despite being prescribed in only half of the patients (45% during hospitalisation and 44% at discharge); (3) post-discharge AF recurrence was strongly associated with in-hospital AF recurrence; (4) short-term ICU complications, particularly pulmonary embolism and type II myocardial infarction, occurred in a subset of patients, and ICU and in-hospital mortality were high.

Current guidelines recommend electrical cardioversion for patients who are haemodynamically unstable [1,4]. However, in other cases, the optimal first-line pharmacological agent for managing NOAF in critically ill patients remains uncertain owing to the lack of randomised controlled trials (comparing antiarrhythmic therapies in this population) and the limited applicability of the evidence from non-ICU populations [13–15]. Observational data indicate that amiodarone is the most frequently used agent in the ICU, with reported conversion rates to sinus rhythm ranging from 18% to 94% [16,17].

In this study, rhythm control strategies—mainly with amiodarone—were predominantly employed. Rhythm control was associated with lower in-hospital AF recurrence. It showed a numerical, non-significant reduction in post-ICU discharge AF recurrence. In contrast, rate control was less effective, consistent with prior ICU-based reports [18–20].

AF recurrence during ICU stay strongly predicted post-discharge recurrence, suggesting that early rhythm control may improve both short- and long-term arrhythmic outcomes. NOAF should not be considered merely transient, self-limited arrhythmia but rather as a marker of underlying atrial vulnerability [21]. During a median follow-up of 10 months, post-ICU discharge AF recurrence occurred in 34% of patients who had been discharged in sinus rhythm.

Patients with recurrent AF during hospitalisation represent a high-risk subgroup and may benefit from structured post-discharge follow-up [22], which could include comprehensive clinical assessment with the identification and modification of risk factors, as well as rhythm surveillance using ECG, Holter monitoring, or wearable devices.

Anticoagulation was initiated in less than half of the patients with NOAF during hospitalisation and continued at discharge for a similar proportion, which was slightly higher than previously reported [23]. Anticoagulation was more frequently prescribed in patients with hypertension and lower illness severity, reflecting the clinical prioritisation of bleeding risk and acute illness severity over the CHA₂DS₂-VASc score alone. Importantly, anticoagulant use was not associated with an increased risk of major bleeding and was strongly associated with continuation at hospital discharge. Given that treatment decisions were influenced by haemodynamic stability and overall illness severity, these findings should be interpreted cautiously due to potential confounding by indication.

The timing of anticoagulation initiation, agent selection, and identification of patients most likely to benefit remain controversial [24,25]. The current guidelines suggest considering long-term oral anticoagulant use in patients with trigger-induced AF who are at elevated thromboembolic risk [4]; however, defining “high thromboembolic risk” in critically ill patients remains challenging [8]. In this real-world cohort, anticoagulation appeared safe and potentially beneficial [26], highlighting the relevance of individualised, risk-adapted decision-making, incorporating additional factors such as AF recurrence, arrhythmic burden, and left atrial enlargement [26].

Finally, patients with NOAF experienced notable short- and long-term complications, including stroke, heart failure, and death, in line with prior studies [27]. ICU and in-hospital mortality were substantially higher than that of the overall ICU population and

rates reported in general multidisciplinary ICU cohorts [28]. These findings are consistent with larger studies, including the FROG-ICU trial [29], Zhang et al. [10], and previous reports demonstrating that NOAF in patients in the ICU is associated with approximately 35% higher 90-day mortality compared with patients without AF and around 10% higher compared with those with pre-existing AF [30]. These data reinforce the concept that NOAF in critically ill patients is a marker of high risk and suggest that early identification, careful management of precipitating factors, and timely initiation of therapy would be beneficial.

In this real-world cohort, early rhythm control appeared beneficial in reducing AF recurrence, and anticoagulation—when deemed safe—was not associated with excess risk of bleeding. These findings highlight the potential value of structured post-discharge follow-up, including rhythm reassessment, optimisation of cardiovascular risk factors, and individualised evaluation of anticoagulation.

This study characterises both the acute ICU phase and the post-discharge trajectory. By assessing treatment patterns in an unselected, pragmatic population, it provides novel insights to the existing literature, bridging the gap between controlled trial evidence and the complexity of everyday clinical practice.

This study is limited by its retrospective, single-centre design and relatively small sample size, which may limit generalisability. Only a small proportion of patients had complete echocardiographic data available; consequently, these parameters were excluded from the analysis. Post-discharge AF recurrence was assessed based on clinical records rather than systematic rhythm monitoring; consequently, asymptomatic or paroxysmal AF episodes may have been missed, potentially leading to the underestimation of the true post-discharge recurrence rates—a limitation inherent to retrospective studies relying on routine follow-up data. In addition, the high in-hospital mortality reduced the number of patients at risk for post-discharge AF recurrence, representing a competing risk that should be considered when interpreting long-term outcomes.

5. Conclusions

In critically ill patients, NOAF was frequently associated with post-ICU discharge recurrence over a 10-month follow-up. Early rhythm control strategies were associated with lower in-hospital and post-discharge AF recurrence, while individualised anticoagulation appeared safe and was not associated with increased bleeding. These findings highlight the potential value of proactive post-discharge follow-up, including rhythm monitoring and optimisation of cardiovascular risk factors, to inform management and potentially mitigate long-term arrhythmic and cardiovascular complications.

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Informed Consent Statement: Patient consent was waived due to the retrospective and observational nature of the study, which involved the analysis of routinely collected clinical data. All data were fully anonymised prior to analysis, and no identifiable personal information was accessed or disclosed.

Data Availability Statement: Data are available from the corresponding author upon reasonable request.

Conflicts of Interest: The authors declare no conflicts of interest.

Abbreviations

The following abbreviations are used in this manuscript:

AF	Atrial fibrillation
ICU	Intensive care unit
NOAF	New-onset atrial fibrillation
NTproBNP	N-terminal pro-B-type natriuretic peptide
OAC	Oral anticoagulation
SAPS II	Simplified Acute Physiology Score II

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