

PREVALENCE OF NEWLY DIAGNOSED ATRIAL FIBRILLATION IN STROKE

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Introduction

Atrial fibrillation (AF) is estimated to be one of the most frequent cardiac arrhythmias with an incidence ranging from 6.6 to 1200/100.000 people*yr. AF is by far the most frequent risk factor for stroke. AF related stroke represents 1.5% of all ischemic strokes in patients aged 50-59 years and increases to 23.5% in elderly (>80 yr old) people. A significant proportion (about 25%) of so-called cryptogenic stroke has to be ascribed to subclinical or unrecognized AF. Identification of AF in a stroke patient is of utmost importance since it affects the following therapeutic workup. In this paper we evaluated the incidence of newly-diagnosed AF in patients with ischemic stroke as well as the presence of risk factors which would be predictive of the occurrence of AF in patients with ischemic stroke or TIA.

Methods

We collected retrospective data from a cohort of patients admitted to the Stroke unit of L. Sacco Hospital in the period March 2014 – March 2016. Inclusion criteria were a diagnosis of ischemic stroke or TIA. Patients with hemorrhagic stroke, subarachnoid hemorrhage or other non-stroke-related diagnoses, as well as patients with incomplete data, were excluded. For each patient we collected the following variables: age, gender, vascular risk factors and indicators (tobacco smoke, hypertension, diabetes, dyslipidemia, overweight, known or newly diagnosed AF, vascular disease, previous cerebrovascular accidents). The stroke characteristics were defined according to NIHSS score, TOAST classification, vascular territory according to OSCP classification, presence of hemorrhagic transformation. Other data included arterial pressure, serum electrolytes, C-reactive protein, INR.

Statistical analysis was performed through IBM SPSS Statistics. Two-tailed t-test, Chi-square and nonparametric tests (Mann-Whitney and Wilcoxon) were properly employed according to the sample characteristics.

Results

We collected data from 332 patients (171 men, 161 women, mean age 72,2). AF was documented in 99 patients (29,8%), 62 of whom (62,6%) with known AF whereas 13 of them (13,1%) were diagnosed in the hospital ward and 24 (24,2%) during the stay in stroke unit (Table 1). According to TOAST classification, 105 patients (31,6%) had embolic stroke, 37 (11,1%) atherothrombotic stroke (great vessel disease), 39 (11,7%) a lacunar stroke, 104 (31,3%) stroke of other or undetermined etiology. TIA was diagnosed in 46 patients (13,8%) (Figure 1).

Table 1. Prevalence of AF in stroke cohort

Total patients	332
No AF	233 (70,2%)
AF	99 (29,8%)
Previously known AF	62 (18,7%)
AF diagnosed in ward	13 (3,9%)
AF diagnosed in Stroke Unit	24 (6,9%)

Table 2. Mean age in patients with and without AF

	Number	Mean	SD	P (by T-test)
Age (years)				
No AF	233	69,84	13,002	< 0.001
AF	99	78,09	9,214	

Table 3. Risk factor distribution in patients with and without AF

	Number	No AF	AF	P (Chi-square)
Smoke	332	233	99	0.005
No	157 (47,3%)	103 (44,2%)	54 (54,5%)	
Previous Active	91 (27,4%) 74 (22,3%)	63 (27%) 63 (27%)	28 (28,5%) 11 (11,1%)	
Hypertension	332	233	99	0.232
No	85 (25,6%)	64 (27,4%)	21 (21,2%)	
Yes	247 (74,4%)	169 (72,53%)	78 (78,7%)	
Diabetes	332	233	99	0.325
No	269 (81%)	192 (82,4%)	77 (77,7%)	
Yes	63 (19%)	41 (17,5%)	22 (22,2%)	
Dyslipidemia	331	232	99	0.682
No	195 (58,9%)	135 (57,9%)	60 (60,6%)	
Yes	136 (41,1%)	97 (41,6%)	39 (39,3%)	
Overweight	264	189	75	0.225
No	96 (36,3%)	116 (61,3%)	52 (71,2%)	
Yes	168 (63,6%)	73 (38,6%)	23 (30,6%)	
Vasculopathy	332	233	99	0.991
No	255 (76,8%)	179 (76,8%)	76 (76,8%)	
Yes	77 (23,2%)	54 (23,1%)	23 (23,3%)	
Pacemaker	332	233	99	0.001
No	313 (94,3%)	226 (96,9%)	87 (87,8%)	
Yes	19 (5,7%)	7 (3,0%)	12 (12,1%)	
IHD	332	233	99	0.415
No	248 (74,7%)	177 (75,9%)	71 (71,7%)	
Yes	84 (25,3%)	56 (24,1%)	28 (28,3%)	

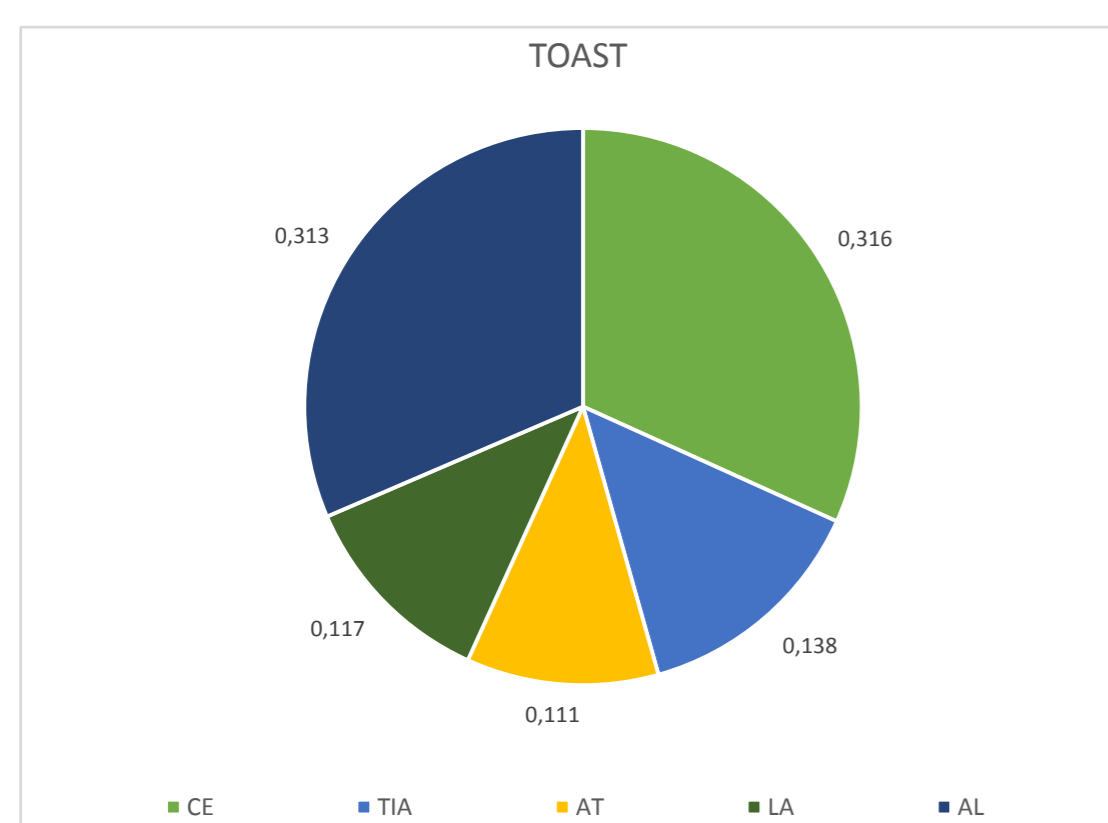


Figure 1. Stroke subtypes according to TOAST

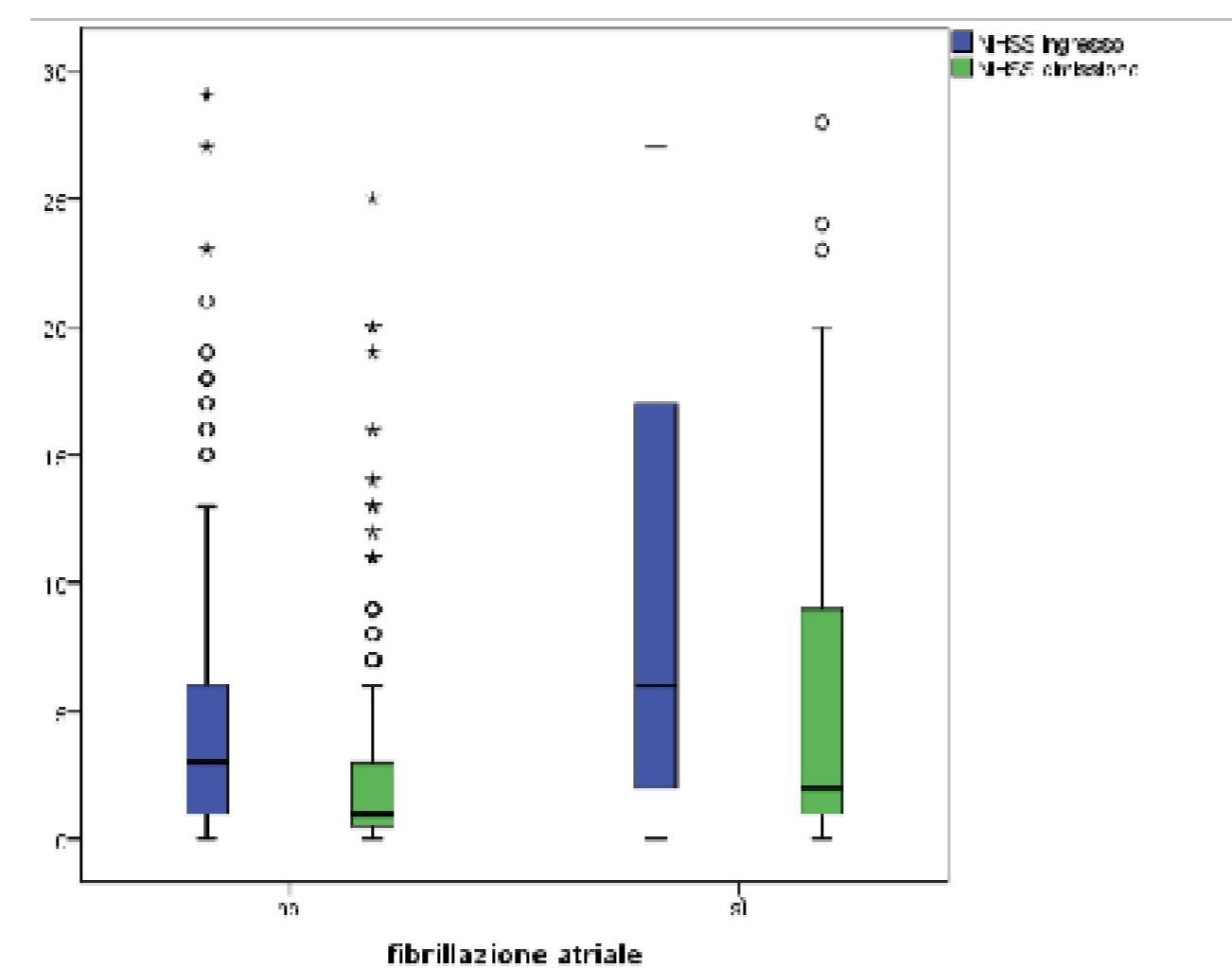


Figure 2. Distribution of NIHSS values at admission and discharge in patients with and without AF (p < 0.001)

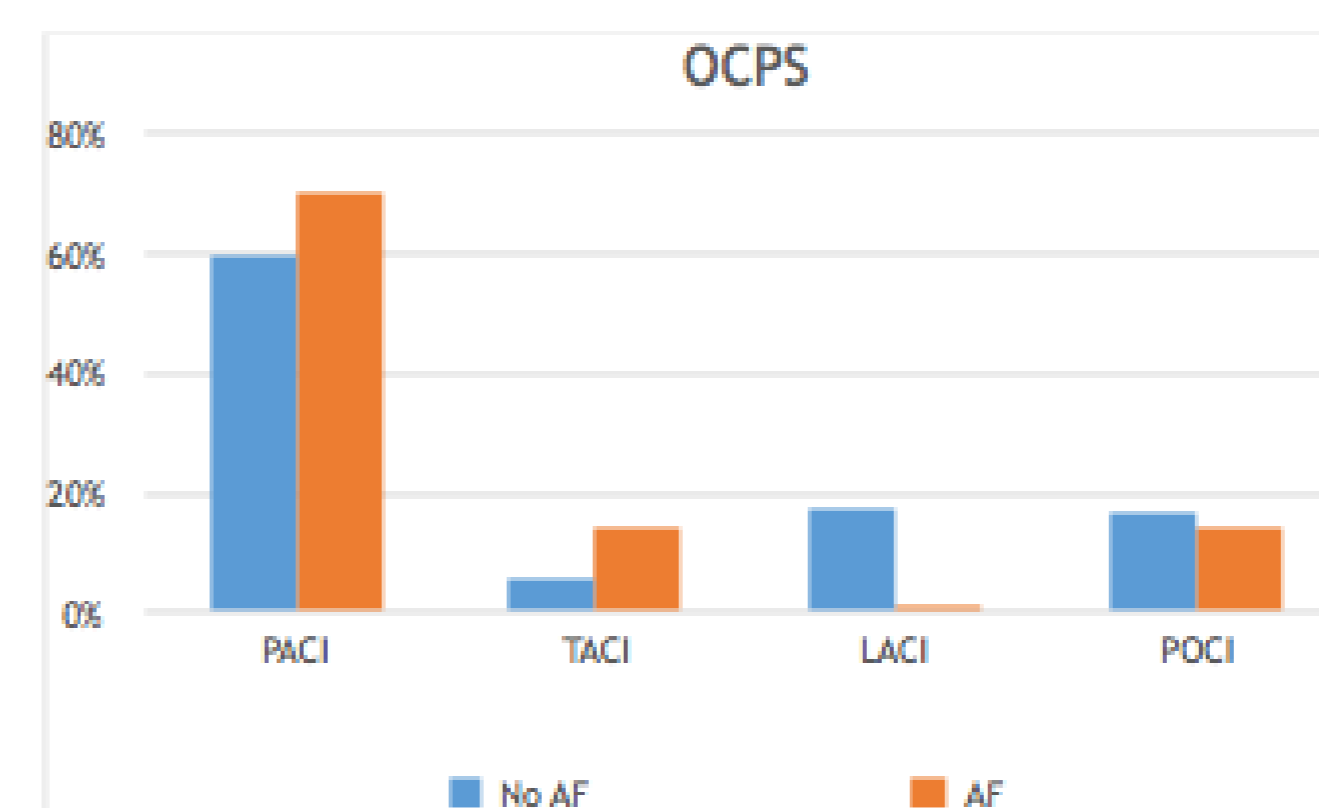


Figure 3. Etiopathogenic stroke subcategories (OCPS) in patients with and without AF.

Conclusioni

AF is confirmed to be a major risk factor for stroke. Among other risk factors and indicators, we found a significant association with age. In fact, stroke patients with AF were about 10 years older than non-AF patients. Within AF patients, smokers were less represented (11.1% vs 27% in non-AF): possibly, smoke-related atherosclerosis represents a greater burden in patients with stroke due to atherothrombosis rather than embolism. An interesting finding was the significant difference in C-reactive protein levels in AF vs non-AF patients (25,6 vs 11,6 mg/L respectively = 0.044). This is in accord with other studies and may be related to mechanisms leading to cardiac remodeling which in turn can be responsible for the maintenance of AF.

Our results also confirm that AF is associated to a greater severity of stroke. AF patients showed a higher NIHSS than non-AF patients either at admission (median 6 vs 3, p<0.001) and at discharge (median 2 vs 1, p=0.001). Moreover, AF patients more often presented with TACI (p<0.001), the OSCP category characterized by higher death rate, longer hospital stay, and a significantly greater 6-month disability and compliance rate respect to other categories.

By comparing patients with known and newly-diagnosed AF we did not find any factor which could be predictive of AF appearance besides older age (80,68±8 years in newly-diagnosed AF vs 76,55±8,233 in patients with known AF, p < 0.025). On the other side, prolonged cardiac monitoring proved to be of utmost importance in detecting AF. It is notable that in our patients as many as 24% of AF was diagnosed during the stay in Stroke Unit. The ASSERT (Asymptomatic Atrial Fibrillation and Stroke Evaluation in Pacemaker Patients and the Atrial Fibrillation Reduction Atrial Pacing Trial) evidenced a significant incidence of atrial tachyarrhythmias in patients undergoing a pacemaker implantation. The CRYSTAL and EMBRACE studies demonstrated the efficacy of prolonged EKG monitoring in detecting asymptomatic episodes of AF. The current AHA/ASA guidelines in fact recommend a prolonged cardiac monitoring (30 days at least) in patients with cryptogenic stroke or TIA, but a minority of centers complies with these recommendations.

The relationship between subclinical AF and cardioembolism is, however, far from being completely understood. Since AF episodes of short duration (minutes, hours) can meet relieved with temporal distance from the embolic event or even after it, this suggests that in such cases AF does not have a proper causative role but represents by itself a risk factor for cardioembolic stroke. Given these caveats, we believe that the uncertainties about the role of AF should not undervalue the importance of a correct therapeutic approach in those cases in which AF is responsible for embolic stroke.

To conclude, AF is a main risk factor for stroke and associated with a worse neurological damage than non cardioembolic strokes. Since paroxysmal AF episodes can be asymptomatic its diagnosis maybe difficult if not suspected. Continuo EKG monitorino has an important role since it can unreveal AF inpatients with "cryptogenic" stroke, although the causal relationship between short runs of paroxysmal AF and stroke is not fully understood.

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