



**UNIVERSITÀ
DEGLI STUDI
DELL'AQUILA**

DIPARTIMENTO DI SCIENZE CLINICHE
APPLICATE E BIOTECNOLOGICHE



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ANTICOAGULANT-RELATED INTRACEREBRAL HEMORRHAGE: 6-YEAR DATA FROM A POPULATION-BASED STROKE REGISTRY

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Background

ICH 15-20% of all strokes; associated with high risk of mortality, and disability
Anticoagulant-associated ICH associated with worst outcome than ICH related to hypertension or amyloid angiopathy

Lower level of consciousness at presentation and larger initial ICH volume predict poor prognosis in patients with warfarin-associated ICH [1].

There are no differences in hematoma characteristics and functional outcome among patients with NOAC- or VKA-related ICH regarding baseline hematoma volume, rate of hematoma expansion, and the proportion of patients with unfavorable outcome at 3 months [2].

[1] Zubkov A. et al. *Predictors of Outcome in Warfarin-Related Intracerebral Hemorrhage. Arch Neurol.* 2008 Oct;65(10):1320-5.

[2] Gerner S. et al. *Characteristics in Non-Vitamin K Antagonist Oral Anticoagulant-Related Intracerebral Hemorrhage. Stroke.* 2019 Jun;50(6):1392-1402.

Aims

To evaluate outcome and risk factors of patients with AR-ICH with those not related to oral anticoagulants (nAR-ICH)

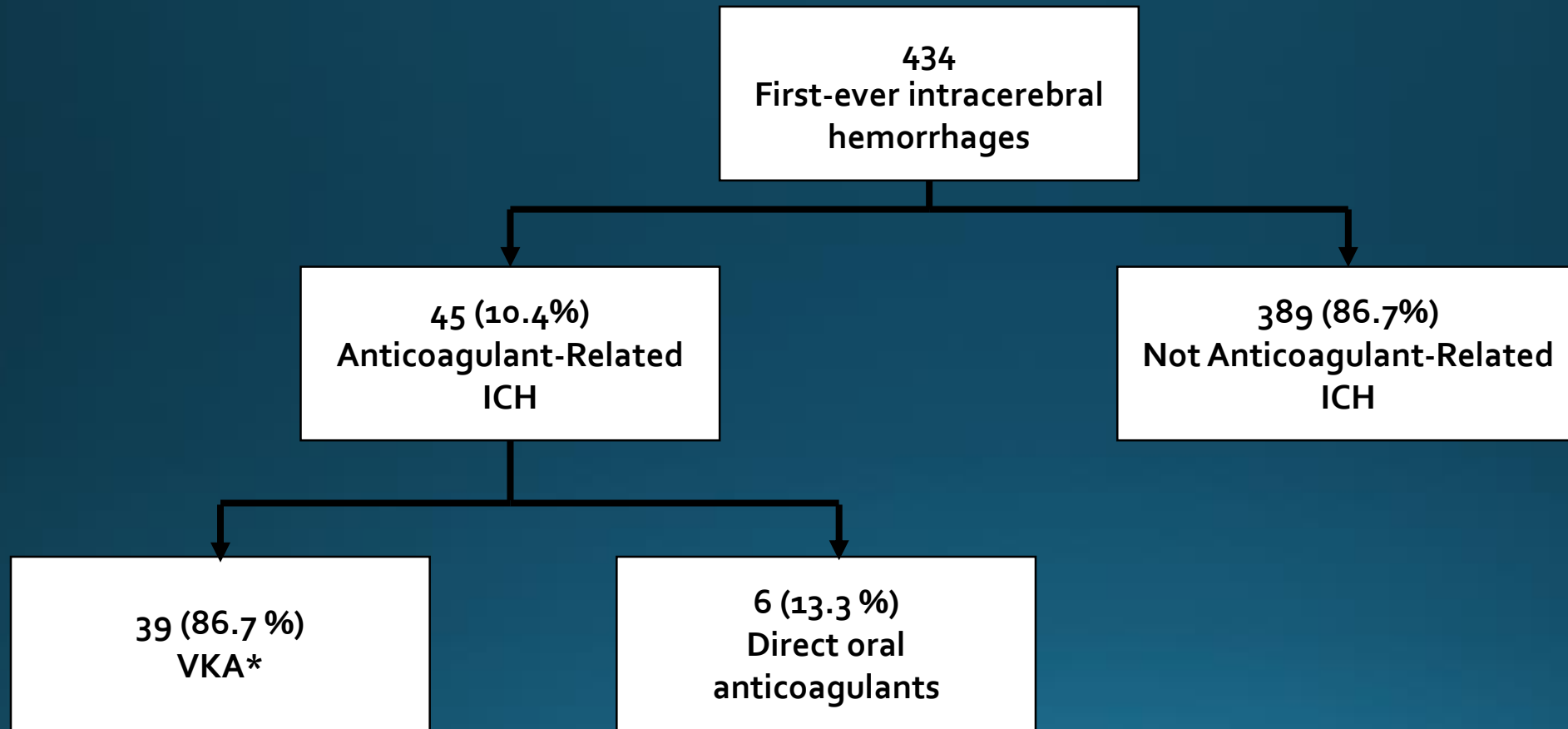


Materials and Methods

- 1 January 2011 - 31 December 2016
- Residents in the district of L'Aquila
- First-ever stroke (ischemic, hemorrhagic, SAH) with a 5-year follow-up
- Classification according to the ICD-IX Revision and ICD-11 - WHO
- AR-ICH was defined in the presence of treatment with VKA with INR ≥ 2.0 , direct oral anticoagulants within 3 days, full-dose heparin, or non-IS systemic thrombolysis [1]

[1] Meretoja A. et al. SMASH-U: a proposal for etiologic classification of intracerebral hemorrhage. Stroke. 2012; 43:2592-2597

1 – Results

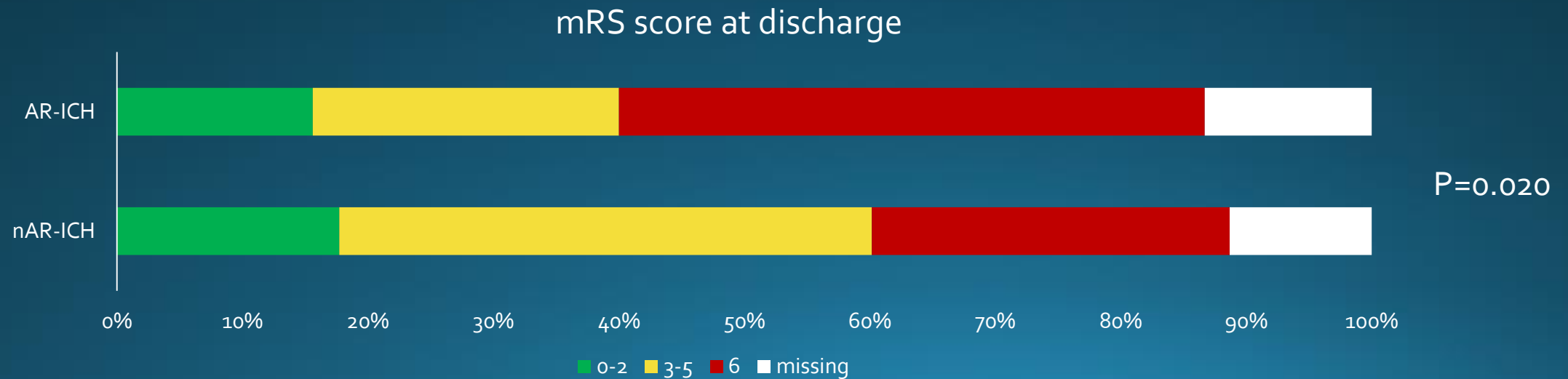
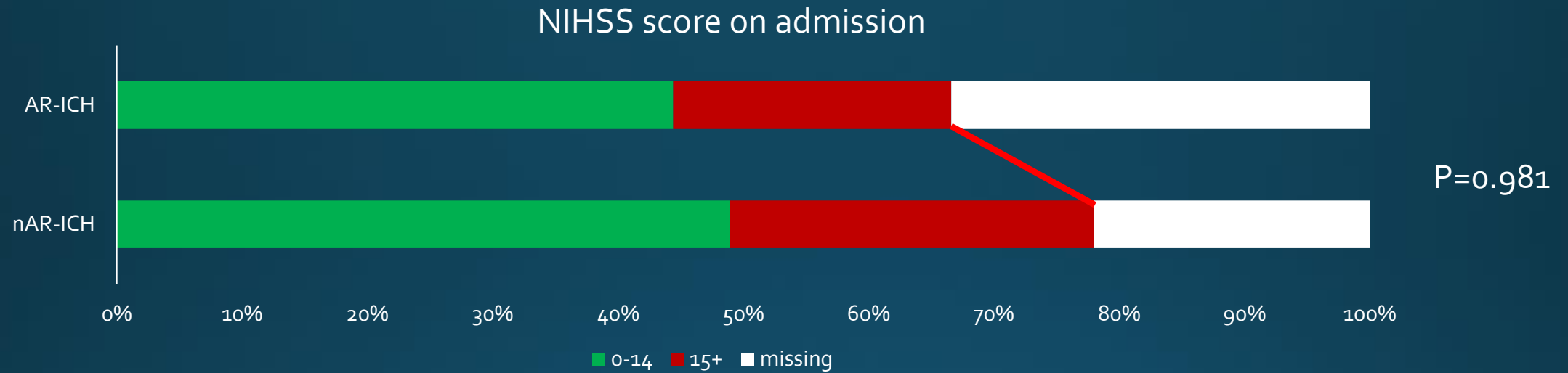


*mean INR at ICH onset of 2.9 ± 1.0

2 – Results

	AR-ICH (n=45)	nAR-ICH (n=389)	P value
Mean age±SD, years	79.8±7.9	73.4±13.7	0.002
Men, n (%)	30 (66.7)	223 (57.3)	0.229
Location, n (%)			
- Deep	17 (37.8)	163 (41.9)	0.240
- Lobar	19 (42.2)	170 (43.7)	
- Posterior fossa	8 (17.8)	38 (9.8)	
- Multiple locations	1 (2.2)	18 (4.6)	
Risk factors, n (%)			
- Arterial hypertension	36 (80.0)	238 (61.2)	0.013
- Diabetes mellitus	7 (15.6)	57 (14.7)	0.872
- Hypercholesterolemia	10 (22.2)	69 (17.7)	0.460
- Smoking	-	22 (5.7)	0.102
- Alcohol abuse	4 (8.9)	63 (16.2)	0.199
- Coronary heart disease	8 (17.8)	56 (14.4)	0.545
- Atrial fibrillation	35 (77.8)	41 (10.5)	<0.001
NIHSS at ICH onset, median (IQR)	11 (5-18)	10 (5-18)	0.782
Ongoing treatments, n (%)			
- Antihypertensives	32 (71.1)	272 (69.9)	0.869
- Antiplatelets	-	131 (33.7)	<0.001
- Statins	8 (17.8)	50 (12.9)	0.358

2 – Results



3 – Results

Table 2. Case-fatality rates of ICH subtypes

	AR-ICH (n=45)	nAR-ICH (n=389)	P value
Dead at 30 days, n (%)	26 (57.8)	133 (34.2)	0.002
Dead at 1 year, n (%)	27 (60.0)	161 (41.4)	0.017

4 – Results

	30-day			1-year		
	HR	(95% CI)	P value	HR	(95% CI)	P value
Age, per 10-year increase	1.14	0.90-1.44	0.288	1.10	0.89-1.36	0.399
Male sex	1.76	0.99-3.11	0.052	1.22	0.72-2.05	0.460
NIHSS, per 10-point increase	2.06	1.51-2.82	<0.001	2.02	1.51-2.71	<0.001
Arterial hypertension	0.75	0.41-1.40	0.369	0.81	0.45-1.44	0.467
Diabetes mellitus	1.24	0.76-2.03	0.384	1.20	0.76-1.87	0.437
Cigarette smoking	0.77	0.25-2.40	0.648	1.30	0.48-3.53	0.609
Atrial fibrillation	0.60	0.22-1.63	0.317	0.78	0.35-1.71	0.530
AR-ICH	2.22	0.71-6.93	0.171	1.82	0.68-4.90	0.234

Conclusions

- AR-ICH carries to an increased risk of mortality
- We need to increase the number of cases to get more information on ICHs related to direct oral anticoagulants
- The epidemiology of AR-ICH will likely change with the increasing use of direct oral anticoagulants
- ICH should be handled as emergencies with specific treatments to restore coagulation to improve the prognosis of these patients



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