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Relationship between structural brain damage and cognitive function in patients with atrial fibrillation

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Background: Atrial fibrillation (AF) has been associated with dementia, but information on the association of structural brain lesions with cognitive function is scarce. The aim of this study was to investigate the relationship between structural brain lesions and neurocognitive function in a cohort of unselected AF patients.
Methods: Swiss-AF is an ongoing, prospective, multicentre, observational cohort study. Overall, 2,415 patients with documented AF were enrolled at 13 sites in Switzerland. All patients underwent neurocognitive testing using the Montreal Cognitive Assessment (MoCA) score, which is scaled from 0 (worst) to 30 (best). Cerebral magnetic resonance imaging (cMRI) was performed at baseline using a standardized protocol. Volumes of infarcts, microbleeds, lacunes and small vessel disease were measured. To assess the relationship between the log-transformed volume of brain lesions and the MoCA score linear regression analyses were performed.
Results: Overall, 1,736 study patients were included in this analysis. Mean age was 73±8 years and 1,261 (73%) were men. The mean CHA2DS2-VASc Score was 3.3±1.7 and 1,559 (90%) patients were on oral anticoagulation. Infarcts, lacunes, microbleeds and small vessel disease were found in 399 (23%), 331 (19%), 370 (21%) and 1709 (98%) patients, respectively. The mean MoCA score was 25.5±3.1. After multivariable adjustment, volume of infarct and volume of small vessel disease remained inversely associated with the MoCA score with β-coefficients (95% CI) of -0.26 [-0.41, -0.11], p<0.001 and -0.12 [-0.23, -0.01], p=0.03, respectively (Table). In a combined model including all brain lesions in one model, volume of infarcts and small vessel disease showed the strongest association with MoCA score (Table).

Brain damage and cognitive function

Model	β-coefficient (95% CI) Univariate	β-coefficient (95% CI) Multivariate*	β-coefficient (95% CI) Combined model**, Univariate
Infarct volume, mm^3	-0.27 [-0.43, -0.11], p<0.001	-0.26 [-0.41, -0.11], p<0.001	-0.56 [-0.85, -0.27], p<0.001
Small vessel disease, mm^3	-0.37 [-0.48, -0.27], p<0.001	-0.12 [-0.23, -0.01], p=0.03	-0.39 [-0.54, -0.23], p<0.001
Lacunes volume, mm^3	-0.28 [-0.62, 0.05], p=0.10	-0.13 [-0.45, 0.20], p=0.44	-0.29 [-0.60, 0.03], p=0.08
Microbleeds volume, mm^3	-0.12 [-0.44, 0.20], p=0.45	-0.17 [-0.48, 0.13], p=0.26	0.01 [-0.29, 0.31], p=0.97

*Multivariable adjusted model was adjusted for age, sex, BMI, education, smoking, hypertension, diabetes, oral anticoagulation, and type of atrial fibrillation. **All variables were added to the same model and brain damage variables are standardized. CI: confidence interval.

Conclusion: In this large cohort of unselected AF patients, there was a high prevalence of brain damage. Old infarcts and small vessel disease on cMRI were the strongest predictors for reduced cognitive function, while microbleeds did not show an association. These findings suggest a differential effect of the different brain lesions on cognitive function.
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Comparison of effectiveness, safety, and healthcare costs in non-valvular atrial fibrillation patients with heart failure prescribed direct oral anticoagulants

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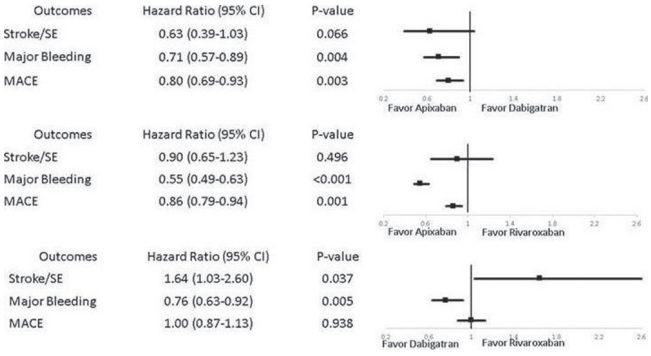
Background: Heart failure (HF) is common among non-valvular atrial fibrillation (NVAF) patients and associated with adverse outcomes. There is limited evidence regarding the effectiveness, safety, and healthcare costs associated with direct oral anticoagulants (DOACs) in NVAF patients with HF treated in clinical practice.
Purpose: Compare stroke/systemic embolism (S/SE), major bleeding (MB), major adverse cardiac events (MACE), and healthcare costs among NVAF patients with HF prescribed DOACs.
Methods: Elderly patients with NVAF and HF who initiated apixaban, dabigatran, or rivaroxaban from 01JAN2013–30SEP2015 in the US Medicare population were included. Propensity score matching was conducted between DOACs. Cox models were used to evaluate the risk of S/SE, MB, and MACE (composite of stroke, myocardial infarction and all-cause death). Generalized linear models were used to compare all-cause healthcare costs (sum of total medical and pharmacy costs); two-part models were used to compare S/SE- and MB-related medical costs.
Results: 4,263 apixaban-dabigatran, 10,477 apixaban-rivaroxaban, and 4,297 rivaroxaban-dabigatran matched pairs were included with a mean follow-up of 7–8 months. Apixaban patients had lower rates of MB and MACE vs. dabigatran and rivaroxaban. Dabigatran patients had a higher rate of S/SE, but a lower rate of MB vs. rivaroxaban (Figure). Apixaban patients had lower MB-related costs vs. dabigatran and rivaroxaban. Apixaban and dabigatran patients had lower total all-cause healthcare costs vs. rivaroxaban (Table).



Conclusions: In this retrospective observational study of NVAF patients with HF, apixaban and dabigatran were associated with lower risk of MB and lower all-cause healthcare costs vs. rivaroxaban. Rivaroxaban was associated with lower risk of S/SE vs dabigatran. This information may be useful in helping healthcare providers select appropriate DOAC treatment for NVAF patients with HF.
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Physical activity and outcome in patients with atrial fibrillation

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Abstract P979 – Table 1

	Apixaban vs Dabigatran N=4,263 N=4,263		Apixaban vs Rivaroxaban N=10,477 N=10,477		Dabigatran vs Rivaroxaban N=4,297 N=4,297	
	Cost PPPM	P-value	Cost PPPM	P-value	Cost PPPM	P-value
S/SE-related medical costs	$67 vs $118	0.075	$64 vs $83	0.243	$117 vs $66	0.064
MB-related medical costs	$194 vs $346	0.001	$248 vs $481	<0.001	$343 vs $424	0.186
Total medical costs	$3,031 vs $3,060	0.853	$3,127 vs $3,458	0.001	$3,075 vs $3,466	0.020
Total pharmacy costs	$526 vs $451	<0.001	$531 vs $485	<0.001	$450 vs $499	0.002
All-cause healthcare costs	$3,557 vs $3,510	0.765	$3,685 vs $3,943	0.004	$3,525 vs $3,965	0.009

PPPM: per patient per month.