ORIGINAL ARTICLE

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Association of different oral anticoagulants use with renal function worsening in patients with atrial fibrillation: A multicentre cohort study

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Background

- Atrial fibrillation (AF) and chronic kidney disease (CKD) are two highly prevalent and frequently coexisting diseases in elderly patients.
- Recent studies have suggested that treatment with NOACs may favourably affect the modification of renal function in patients with AF, but this issue has been investigated essentially in the setting of randomized controlled clinical trials, in which the characteristics of patients may not fully reflect those of patients managed in daily clinical practice.

Aim of the study

- To investigate the decline of estimated glomerular filtration rate (eGFR) in patients with atrial fibrillation (AF) treated with vitamin K antagonists (VKAs) or nonVKA oral anticoagulants (NOACs).

Methods

- Multicentre prospective cohort study including 1667 patients with nonvalvular AF.
- The eGFR was assessed by the CKD-EPI formula at baseline and during follow-up.
- The primary endpoint of the study was the median annual decline of eGFR according to VKA (n = 743) or NOAC (n = 924) use.
- As secondary endpoints, the transition to eGFR < 50 ml/min/1.73 m2 and the eGFR class worsening were analysed.

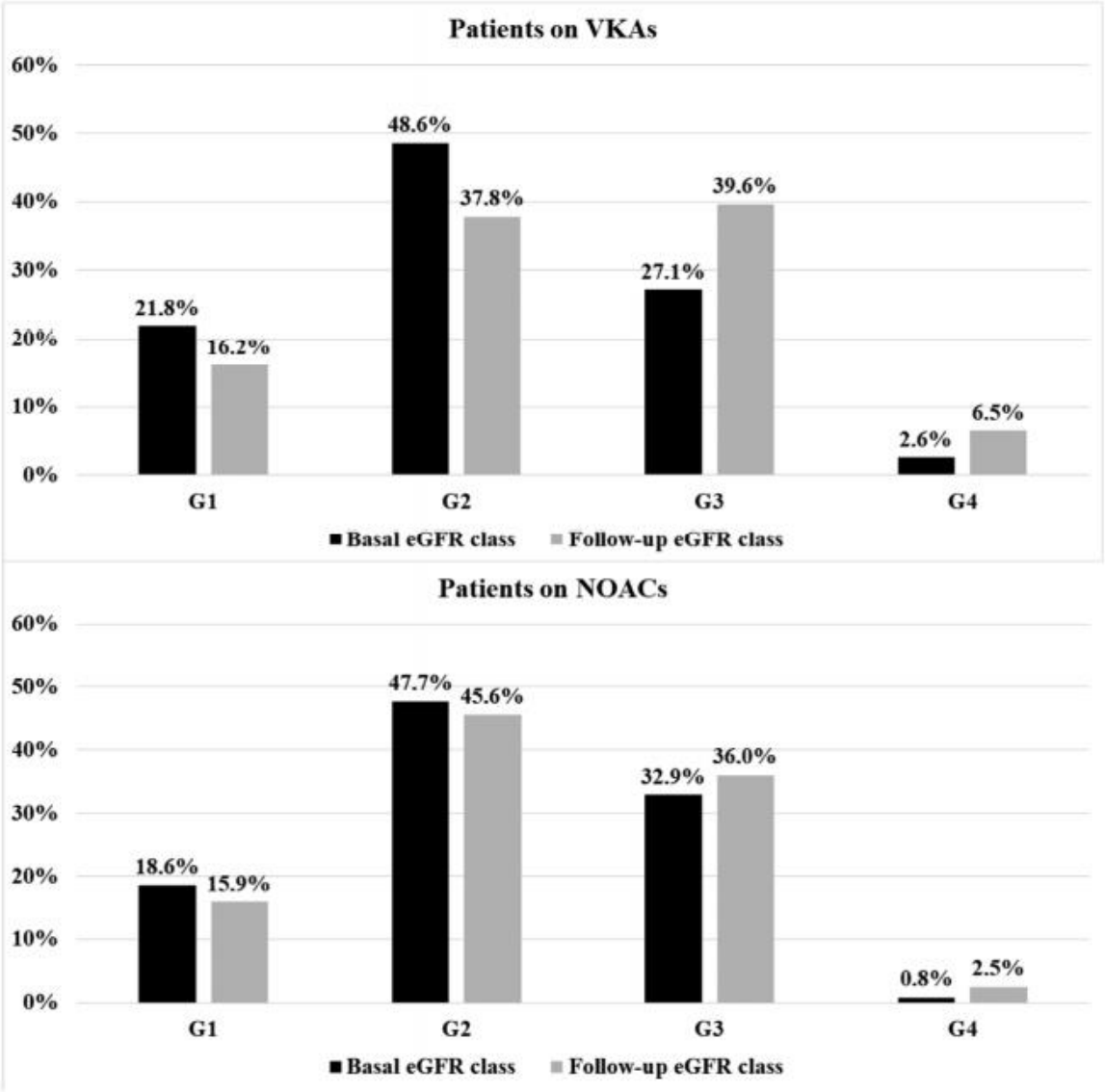
Results (I)

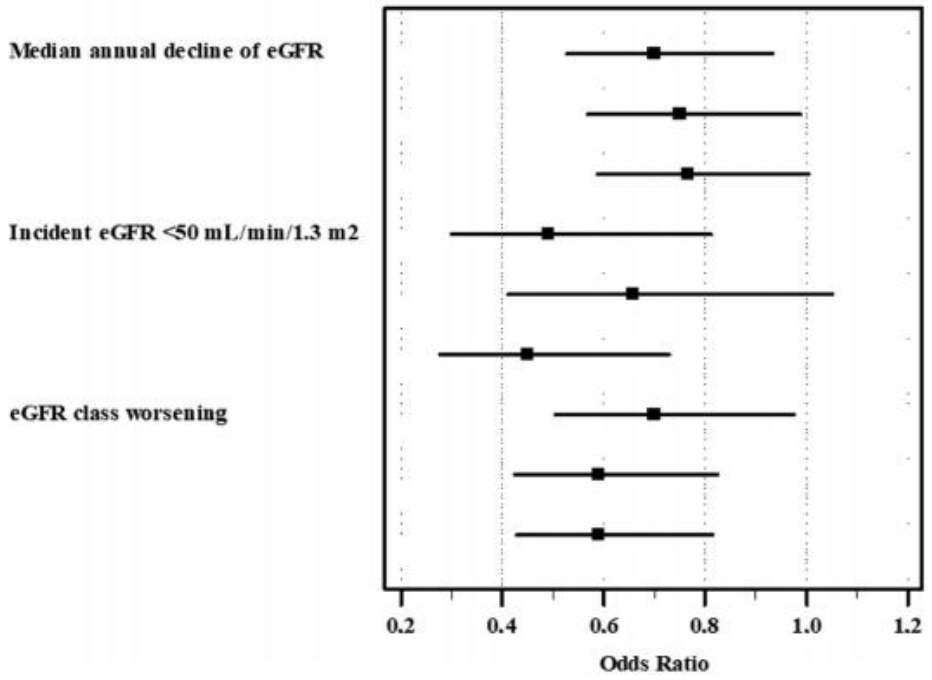
- Median age was 73.7 ± 9.1 years and 43.3% were women.
- VKA-treated patients showed an eGFR decline of −2.11, which was −0.27 ($P < 0.001$ vs VKAs), −1.21 ($P = 0.004$ vs VKAs) and −1.32 ($P = 0.003$ vs VKAs) in patients on dabigatran, rivaroxaban and apixaban, respectively.
- Transition to eGFR < 50 ml/min/1.73 m2 was lower in dabigatran and apixaban treated patients ($P = 0.006$ and $P = 0.001$, respectively)

Results (II)

- A lower rate of eGFR class worsening was found in all groups of NOACs compared to VKAs.
- No difference between full and reduced dose of NOAC was found.
- Subgroup analysis showed that the association between NOAC and eGFR changes was markedly reduced in diabetic patients.

FIGURE 1 Distribution of patients among eGFR classes according to treatment with vitamin K (VKA) or nonvitamin K oral anticoagulants (NOACs) at baseline and during follow-up. G1, eGFR >90 mL/min/1.73 m^2; G2, eGFR 89-60 mL/min/1.73 m^2; G3, eGFR 59-30 mL/min/1.73 m^2; G4, eGFR <30 mL/min/1.73 m^2





	Odds Ratio	95%CI	*P* value (vs. VKA)
Dabigatran	**0.701**	**0.527-0.933**	**0.015**
Rivaroxaban	**0.750**	**0.568-0.990**	**0.042**
Apixaban	**0.767**	**0.587-1.003**	**0.053**
Dabigatran	**0.492**	**0.298-0.813**	**0.006**
Rivaroxaban	**0.658**	**0.410-1.054**	**0.081**
Apixaban	**0.449**	**0.276-0.728**	**0.001**
Dabigatran	**0.700**	**0.503-0.975**	**0.035**
Rivaroxaban	**0.591**	**0.423-0.825**	**0.002**
Apixaban	**0.591**	**0.429-0.815**	**0.001**

FIGURE 3 Adjusted OR for each direct oral anticoagulant drug for prespecified endpoints as compared to VKAs. Adjusted for pattern of atrial fibrillation, age ≥75 years, female sex, arterial hypertension, diabetes mellitus, history of myocardial infarction/coronary heart disease, heart failure, history of stroke/transient ischemic attack, angiotensin converting enzyme inhibitor, angiotensin receptor blockers, β blockers, calcium channel antagonists, statins, antiplatelets

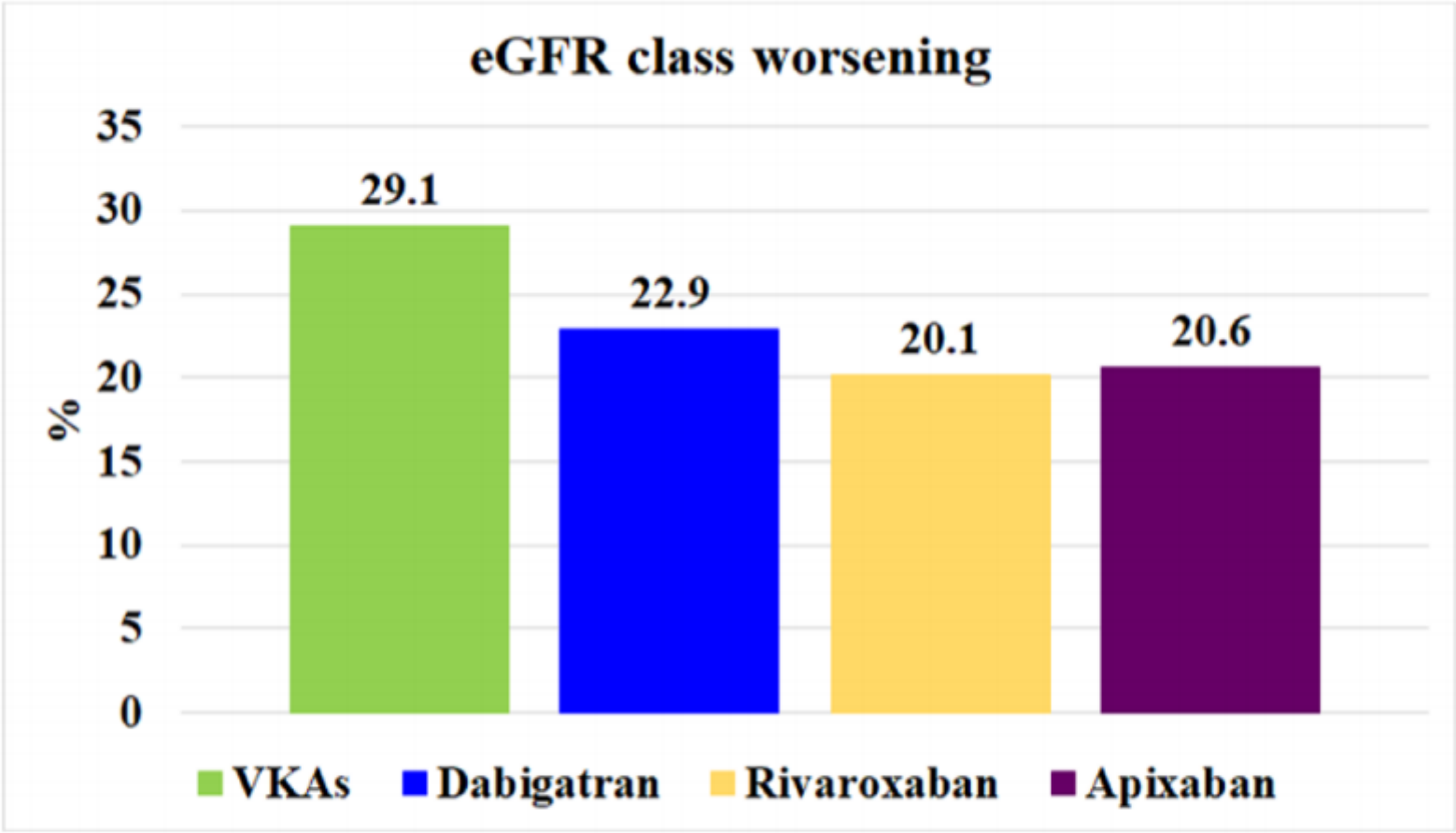


FIGURE 4 Proportion of patients showing eGFR class worsening according to anticoagulation treatment

Conclusions

- The significant proportion of patients passing to a lower eGFR class during follow-up, and in particular passing from above to below 50 mL/min, should be regarded to as a clinically important issue for the management of anticoagulant therapy.
- Patients prescribed NOACs showed a lower decline of renal function compared to those prescribed VKAs.
- This effect was partially lost in patients with diabetes.