

Efficacy of Apixaban in Nonhemorrhagic Stroke Prevention in Morbid Obesity

Background

- Cardiac arrhythmias, such as atrial fibrillation and atrial flutter, predispose patients to an increased risk of ischemic stroke. Warfarin, a vitamin K antagonist, has been traditionally used as the mainstay treatment in the prevention of ischemic stroke in atrial fibrillation and atrial flutter. During the last decade, novel oral anticoagulants (NOACs) were introduced and replaced Warfarin as the preferred treatment method for stroke prevention. Due to their fixed dosing and lack of requirement for routine monitoring, NOACs have decreased the complexity of care imposed on these patients. Apixaban, a commonly prescribed NOAC, has generic versions of the medication approved by the U.S. Food and Drug Administration. (1) The Apixaban for Reduction in Stroke and other Thromboembolic Events in Atrial Fibrillation (ARISTOTLE) trial showed Apixaban to be superior to Warfarin in the prevention of ischemic stroke and systemic embolization in patients with nonvalvular atrial fibrillation, while decreasing the risk of bleeding. (2) While NOACs are generally preferred over Warfarin due to their efficacy and ease of use, there remains concerns about the efficacy of these medications in those who are morbidly obese.

Objective

The aim of this study is to assess the efficacy of Apixaban in stroke prevention in relation to a patient's body mass index (BMI).

Methods

Retrospective Chart Review

Scope of Inquiry

- Hospital Corporation of America West Florida Division
- Comprehensive Network of 15 Hospitals

Study Period:

January 2019 to December 2022

Inclusion Criteria

- Age over 18
- Atrial fibrillation or atrial flutter listed as a diagnosis
- Apixaban listed as a home medication

- Number of observations: 14858 patients meet inclusion criteria**
- 199 patients were admitted with a diagnosis code of Acute Ischemic Stroke (I63.X)**
- Excluded patients admitted with a diagnosis code of Acute Hemorrhagic Stroke (I60.X) (I61.X) (I62.X)**

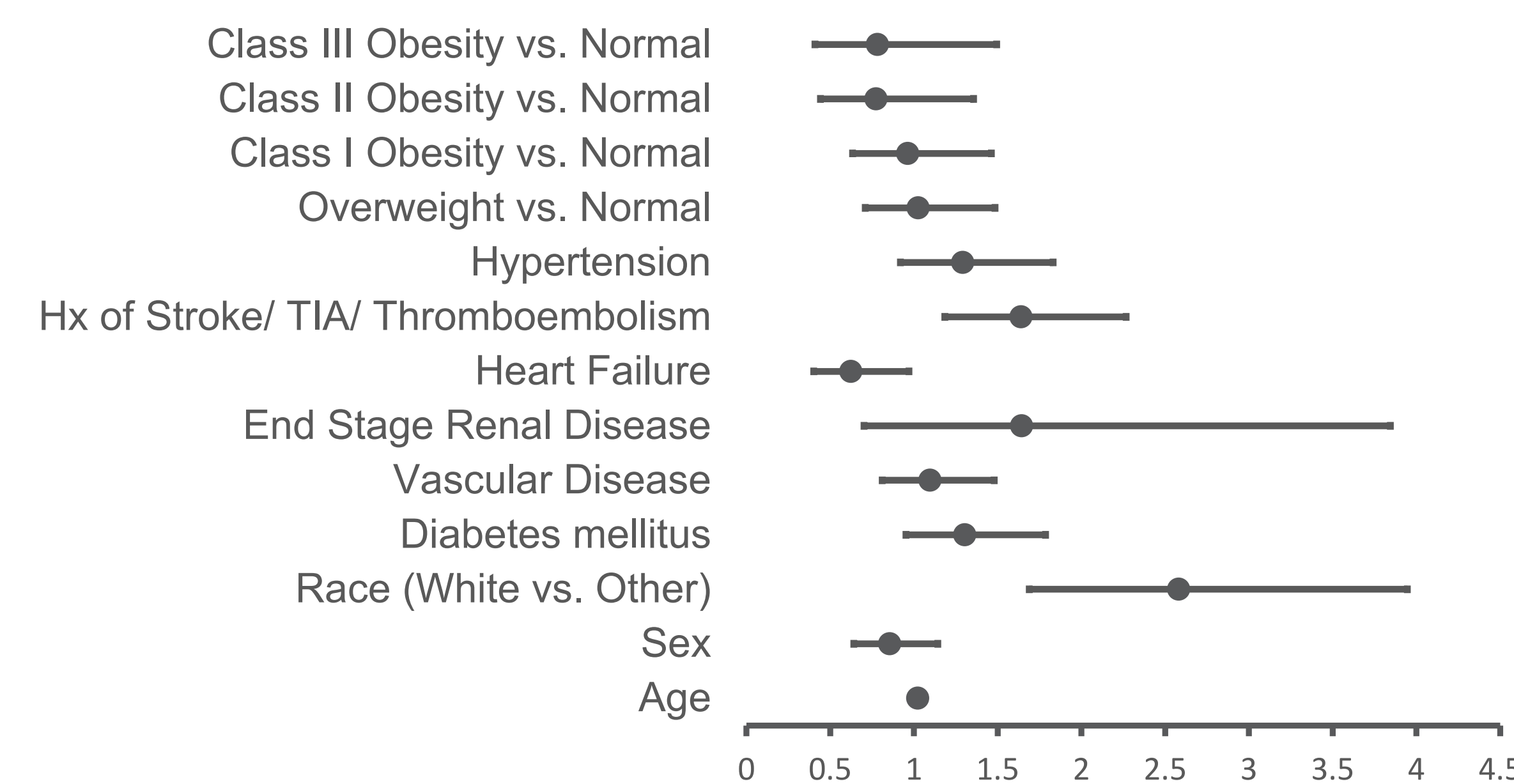
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Results

Acute Ischemic Stroke by Body Mass Index

Effect n, (%)	Normal (BMI < 25)	Overweight (BMI 25-30)	Class I Obesity (BMI 30-35)	Class II Obesity (BMI 35-40)	Class III Obesity (BMI >40)	Overall
Number of Patients	3279 (22.07)	5091 (34.26)	3417 (23.00)	1784 (12.01)	1287 (8.66)	14858 (100)
Mean Age	76.27	74.66	72.28	69.82	65.75	73.11
Female	1578 (48.12)	1899 (37.3)	1297 (37.96)	748 (41.93)	664 (51.59)	6186 (41.63)
Male	1701 (51.88)	3192 (62.7)	2120 (62.04)	1036 (58.07)	623 (48.41)	8672 (57.37)
Black	76 (2.32)	118 (2.32)	121 (3.54)	60 (3.36)	98 (7.61)	473 (3.18)
Other Race	94 (2.87)	159 (3.12)	117 (3.42)	65 (3.64)	54 (4.2)	489 (3.29)
White	3109 (94.82)	4814 (94.56)	3179 (93.03)	1659 (92.99)	1135 (88.19)	13896 (93.53)
CHA ₂ DS ₂ -VAsc Score	3.91	2.9	3.03	3.11	3.22	3.21
Heart Failure	780 (23.79)	1234 (24.24)	923 (27.01)	569 (31.89)	458 (35.59)	3964 (26.68)
Hypertension	1532 (46.72)	2483 (48.77)	1678 (49.11)	812 (45.52)	582 (45.22)	7087 (47.70)
Hx of Stroke/ TIA/ Thromboembolism	619 (18.88)	861 (16.91)	545 (15.95)	269 (15.08)	186 (14.45)	2480 (16.69)
Vascular Disease	1222 (37.27)	2014 (39.56)	1382 (40.44)	686 (38.45)	394 (30.61)	5698 (38.35)
Diabetes Mellitus	530 (16.16)	1173 (23.04)	1123 (32.87)	682 (38.23)	573 (44.52)	4081 (27.47)
ESRD	59 (1.8)	85 (1.67)	82 (2.4)	43 (2.41)	27 (2.1)	296 (1.99)
Acute Ischemic Stroke	48 (1.46)	74 (1.45)	46 (1.35)	18 (1.01)	13 (1.01)	199 (1.34)

Odds Ratio Estimates



Discussion

- In our retrospective analysis, there was no statistical difference in the rates of acute ischemic stroke in patients with a diagnosis of atrial fibrillation/atrial flutter while taking Apixaban across all BMI categories. In 2016, The International Society of Hemostasis and Thrombosis (ISTH) recommended against the use of NOACs in those with a BMI over 40 or a weight over 120 kg due to limited clinical data and the concern of under dosing. They also recommended that if NOACs were being used in patients with a BMI over 40 or a weight over 120 kg to check a drug-specific serum level and to switch to Warfarin if the levels did not fall within the expected range. In 2021, the ISTH released new recommendations stating that Apixaban and Rivaroxaban could be used in the treatment of venous thromboembolism regardless of a patient's BMI. However, they did not address the use of NOACs in patients with a BMI >40 and nonvalvular atrial fibrillation or atrial flutter. (3,4) While our analysis only evaluates Apixaban and not other NOACs, our findings are consistent with previous studies suggesting the safety of Apixaban in stroke prevention in patients across different BMIs. (5-9) A large randomized control trial is still needed to confirm these results.

Conclusion

- BMI should not be used as an exclusion criteria for prescribing Apixaban for patients with atrial fibrillation/atrial flutter.

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