ACE inhibitor use is associated with angiectasias on video capsule endoscopy (VCE) in patients with iron deficiency anemia

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Introduction

- Small bowel bleeding recurrence after endoscopic therapy is high and medical therapies have limited efficacy.
- In those with left ventricular assist devices (LVADs), the use of angiotensin converting enzyme inhibitors (ACEi) has been associated with a reduced rate of gastrointestinal bleeding.
- Conversely, the antiplatelet effects of ACEi have been described thought due to their effects in decreasing platelet aggregation.

Study Aim: determine whether ACEi or angiotensin receptor blocker (ARB) therapy has an impact on the rate of positive VCE small bowel findings in those with iron deficiency anemia (IDA).

Methods

- Data was collected from VCE examinations performed for IDA between January 1, 2009 to March 1, 2018 at a single U.S. tertiary medical center.
- Findings were based on the P0-P2 grading system (listed below).
- The primary outcome of interest was a positive (P2) VCE.
- Data were analyzed using Wilcoxon rank-sum test for continuous variables and Fischer's exact test for dichotomous variables.
- Bivariate logistic regression was performed to identify independent factors predictive of positive VCE.

Grade	Criteria	Examples
P0	No bleeding potential	Visible submucosal veins, diverticula without blood, or nodules without mucosal break
P1	Uncertain hemorrhagic potential	Red spots or small or isolated erosions
P2	**High bleeding potential**	**Typical angiomata, large ulcerations, tumors or varices, or active bleeding**

Results

- Eighty-two VCE were included in the final analysis.
- Median age was 67.6 (IQR: 57.1-75.5) years and 38 (46.3%) patients were male.
- Thirty-seven (45.1%) VCE examinations were positive with the most common finding of angiectasia in 21 (55.3%). Risk factors for positive VCE are listed in Table 1.
- In univariate analysis, ACEi therapy associated with both positive VCE (P=0.014) and the presence of angiectasia (P=0.021), whereas ARB therapy did not associate with positive VCE.
- ACEi findings remained significant in bivariate analysis after controlling for cardiac and pulmonary comorbidities.

Table 1: Univariate predictors of positive video capsule endoscopy in iron deficiency anemia

	Negative VCE (n = 45)	Positive VCE (n =37)	P-value
Age, years, mean (SD)	63.6 (15.8)	68.6 (9.3)	0.303
Male sex, n (%)	21 (46.7)	17 (46)	1
White race, n (%)	22 (48.9)	20 (54.1)	0.223
Active smoking, n (%)	6 (14)	11 (29.7)	0.105
Outpatient location, n (%)	31 (68.9)	21 (56.8)	0.357
Chronic kidney disease, n (%)	10 (22.2)	13 (35.1)	0.224
Chronic liver disease, n (%)	3 (6.7)	4 (10.8)	0.696
Congestive heart failure, n (%)	10 (22.2)	13 (35.1)	0.224
Diabetes mellitus, n (%)	15 (33.3)	15 (40.5)	0.645
Cardiac valvular disease, n (%)	7 (15.6)	6 (16.2)	1
Age, years, mean (SD)	63.6 (15.8)	68.6 (9.3)	0.303
Coronary artery disease, n (%)	14 (31.1)	14 (37.8)	0.641
Cardiac arrhythmia, n (%)	**10 (22.2)**	**18 (48.7)**	**0.019**

Table 1 (cont):

	Negative VCE (n = 45)	Positive VCE (n =37)	P-value
Chronic lung disease, n (%)	10 (22.2)	13 (35.1)	0.224
Left ventricular assist device, n (%)	2 (4.4)	2 (5.4)	1
Blood transfusion in the preceding 4 weeks, n (%)	17 (37.8)	16 (43.2)	0.656
Aspirin, n (%)	20 (44.4)	14 (37.8)	0.654
Thienopyridine, n (%)	3 (6.7)	2 (5.4)	1
Coumadin, n (%)	**1 (2.2)**	**5 (13.5)**	**0.086**
SSRI/SNRI, n (%)	7 (15.6)	9 (24.3)	0.404
ACEi	**7 (15.6)**	**15 (40.5)**	**0.014**
ARB	9 (20)	7 (18.9)	1
Hemoglobin, g/dL[1]	9.9 (1.7)	9.2 (2.3)	0.216
Platelets, 10^9/L[1]	225.4 (67.5)	208.6 (84.9)	0.202
BUN, mg/dL[1]	21.9 (13.1)	26.7 (22)	0.869
Creatinine, mg/dL[1]	1.3 (0.5)	1.9 (1.5)	0.197
Ferritin, ng/mL,[1]	128 (259)	39.6 (28.7)	0.966
Percent saturation, %[1]	14.8 (15.1)	13.7 (15.4)	0.76

Conclusion

- The presence of ACEi use was associated with small bowel angiectasias on VCE in univariate analysis and when controlled for cardiac and pulmonary risk factors in this single center study.

References

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