Abstract 2

Are There Consequences of Discontinuing Angiotensin System Inhibitors Preoperatively in Ambulatory and Same-Day Admission Patients?

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ACE inhibitors (ACEIs) and angiotension receptor blockers (ARBs) are commonly used treatments for hypertension (HTN). Studies describe adverse effects after induction of anesthesia in groups of inpatients who continued medications preoperatively.[1] However, studies have not specifically addressed whether discontinuation predisposes patients to preoperative HTN.[2] We undertook this study to evaluate the impact of discontinuing ACEIs/ARBs in the preoperative period in ambulatory and same-day patients.

Methods: Randomized, single-blind, controlled trial (IRB approved). Inclusion criteria: age > 18 years, ASA 2–3, ACEI/ARB use > 6 months, all types of surgery and anesthesia. Patients on diuretics, beta-blockers, and calcium channel blockers (CCBs) were included. Exclusion criteria: uncontrolled HTN > 180/110 in presurgical testing, unstable ASA 3 or more, pregnancy, BMI > 45. Patients were randomized into two groups: group 1 was instructed not to take ACEIs/ARBs on day of surgery; group 2 was instructed to take ACEIs/ARBs 2 hours before surgery. Other anti-HTN medications were continued. Time last medication taken was recorded. Analysis stratified as taken medication ≥ 10 hours before surgery. Preoperative BP was recorded in holding area. *Primary outcome:* prevalence of preoperative hypertension by Joint National Committee 7 definitions.[3] *Secondary outcome:* cancellations due to unstable BP or other perioperative sequelae. A post hoc analysis of maximum and minimum intraoperative and postoperative BP was obtained from available anesthesia records. Categorical data were analyzed by Kruskal-Wallis test. P value < 0.05 considered significant.

Results: 428 patients were enrolled. 94 were excluded (38 surgery cancelled, 14 patient withdrawals, 22 met exclusion criteria, 20 lost to follow-up), leaving 334 in the analysis. Demographics were similar between the groups, and there were no differences between groups in preoperative BP or degree of preoperative HTN **(Table, below)**. Hispanics had more severe HTN than whites and blacks (P = 0.03). In post hoc analysis of 95 patients, there was no difference in mean maximum and minimum intraoperative and postoperative BP. No cancellations were reported due to unstable preoperative BP.

Conclusion: Discontinuing ACEIs/ARBs ≥ 10 hours preoperatively does not increase the incidence of pre- or perioperative hypertension or cancellation of surgery compared with continuing ACEIs/ARBs. Patients may safely discontinue these medications if perioperative hypotension is of concern.

1. Comfere T, Sprung J, Kumar MM, et al. Angiotensin system inhibitors in a general surgical

population. Anesth Analg 2005; 100:636–644.

2. *Rosenman DJ, McDonald FS, Ebbert JO, Erwin PJ, LaBella M, Montori VM. Clinical consequences of withholding versus administering renin-angiotensin-aldosterone system antagonists in the preoperative period. J Hosp Med 2008; 3:319–325.*
3. *Chobanian AV, Bakris GL, Black HR, et al. Seventh report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. Hypertension 2003; 42:1206–1252.*

TABLE
Demographics, antihypertensive therapies, and comorbidities

	Time since last ACEI/ARB dose	
	< 10 h (n = 161)	≥ 10 h (n = 173)
Median age, yr (range)	61 (27–90)	61 (38–82)
Female, n (%)	109 (67.7)	114 (65.49)
African American, n (%)	98 (60.9)	94 (55)
ASA 3, n (%)	44 (27.3)	57 (32.9)
ACEI, n (%)	82 (50.9)	88 (51.2)
ARB, n (%)	79 (50.3)	85 (49.4)
Beta-blockers, n (%)	48 (30.4)	55 (32.7)
CCB, n (%)	35 (21.7)	34 (19.8)
Diabetes, n (%)	57 (35.4)	65 (37.6)
Coronary artery disease, n (%)	16 (9.9)	24 (13.9)
Preoperative blood pressure < 140/90, n (%)	98 (62)	103 (61)
Preoperative moderate HTN stage I (≥ 140/90), n (%)	45 (28.5)	50 (29.6)
Preoperative severe HTN stage II (≥ 160/100), n (%)	15 (9.5)	16 (9.5)