

Poster Abstracts

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THE SIGNIFICANCE OF ANGIOTENSIN II RECEPTOR BLOCKER OR ANGIOTENSIN CONVERTING ENZYME INHIBITOR USE IN SUDDEN CARDIAC DEATH

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Objectives: Angiotensin converting enzyme inhibitors (ACE inhibitors) and angiotensin II receptor blockers (ARB) are agents widely used for hypertension and heart disease. As inhibitors of the renin angiotensin aldosterone system, they may cause hyperkalemia. In the present study, we investigate the relationship between ACE inhibitor or ARB use and hyperkalemia in patients diagnosed with sudden cardiac death.

Methods: We looked into oral ACE inhibitor or ARB administration among cardiopulmonary arrest patients brought in by ambulance to our facility during the four-year period from January 2012 to December 2015 where the cause of death was determined to be sudden cardiac death despite temporary return of spontaneous circulation after starting cardiopulmonary resuscitation. Subjects were dichotomized into those taking an ACE inhibitor or ARB and those not taking an ACE inhibitor or ARB. Variables determined retrospectively included: serum potassium, estimated glomerular filtration rate as an index of kidney function and time duration from cardiopulmonary arrest to return of spontaneous circulation. The Mann-Whitney U-test was used to compare continuous data between groups. The results are expressed as median plus range. Statistical significance was considered $p < 0.05$.

Results: Twenty-eight patients met inclusion criteria. Mean age was 81 years (range, 35-93 years). There were 20 males and 8 females. Eight subjects were ACE inhibitor or ARB users; 20 subjects were nonusers. The serum potassium level was significantly higher in ACE inhibitor or ARB users than in nonusers (median, 6.7mEq/L (range, 4.5-10.0) vs. 5.3mEq/L (range, 3.6-8.3); $P=0.028$). The estimated glomerular filtration rate was significantly lower in ACE inhibitor or ARB users than in nonusers (median, 24.1 mL/min/1.73 m² (range, 5.0-57.3) vs. 46.9 mL/min/1.73 m² (range, 3.8-97.1); $P=0.033$). The two groups had no significant difference in time duration from cardiopulmonary arrest to return of spontaneous circulation (median, 34.5 minutes (range, 17-45) vs. 40.0 minutes (range, 10-87); $P=0.219$).

Conclusion: It is possible that hyperkalemia induced by ACE inhibitor or ARB use is a cause of sudden cardiac death especially in the patients with chronic kidney disease. Further case studies are needed to elucidate this relationship.