SAIDH – SYNDROME OF AMIODARONE-INDUCED HYPONATREMIA

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Case Vignettes

Introduction: Hyponatremia is a tremendously rare side effect of amiodarone,. A PubMed-based literature search of “amiodarone-induced hyponatremia” has revealed at least 15 cases.

Case: 66-year-old male was transferred for urgent percutaneous coronary angiography. He presented with sudden onset substernal chest pressure with associated diaphoresis and dyspnea. His initial EKG demonstrated sinus rhythm with second degree AV block, along with ST elevations of the inferior leads. Cardiac catheterization revealed 100% occlusion of the mid right coronary artery and two drug-eluting stents were placed. He was transferred to the cardiac intensive care unit and home guideline-directed medical therapy was resumed. Post-catheterization he developed new-onset atrial fibrillation, therefore we gave IV amiodarone 150 mg and started an amiodarone infusion at 1 mg/min and a heparin infusion. Initial laboratory studies were unremarkable. He subsequently converted into normal sinus rhythm; however, the following day lab work revealed an acute drop in sodium from 136 mmol/L to 123 mmol/L. Further work up of his asymptomatic hyponatremia was consistent with syndrome of inappropriate antidiuretic hormone release, with a serum osmolality of 262 mOsm, urine osmolality of 774 mOsm and urine sodium of 40 mmol/L. Serum TSH was 2.36 mIU/L and morning cortisol was 14 mcg/dL. CNS pathology, pulmonary infection, and malignancy as the underlying etiology were also excluded. We performed a detailed literature search on medication induced hyponatremia and after isolating amiodarone as a culprit, the medication was discontinued and the patient was placed on fluid restriction. His sodium gradually improved over the following two days and was normal upon discharge.

Discussion: Several mechanisms have been proposed to explain amiodarone-induced SIADH related hyponatremia. It is possible that similar to cardiac myocyte ion channel modulation, amiodarone also modulates ion channels in the central nervous system and the kidneys; thereby leading to an excessive release of ADH from the pituitary, mimicking the effect of ADH on the kidneys, resulting in further water retention. This association has been defined predominantly in males (80%) with a mean age of 69 +/- 6.04. The time of onset of hyponatremia after the initiation of amiodarone is highly variable and differs between intravenous and oral formulations (days to months). Literature describes onset as early as 20 hours and as late as 11 days after intravenous amiodarone loading. In our case hyponatremia was diagnosed 26 hours after initiation of amiodarone infusion. Management of amiodarone-induced SIADH rests on its early identification. The mainstay of therapy involves medication discontinuation and fluid restriction. Some authors have reported sodium improvement after dose reduction alone, suggestive of a dose-effect relationship. Hypertonic saline has also been utilized as an adjunctive treatment to restore sodium homeostasis.

Conclusion: Amiodarone induced hyponatremia is a rare yet consequential finding. A high index of suspicion for medication induced SIADH must be maintained when evaluating new onset hyponatremia in the inpatient setting in order to promptly facilitate resolution. Discontinuation of amiodarone leads to resolution of hyponatremia making early detection necessary.