

Evaluation of Hyponatremia Risk Among Geriatric Patients Exposed to Selective Serotonin Reuptake Inhibitors (SSRIs) and Thiazide Diuretics

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Background

- Hyponatremia is one of the most common electrolyte disorders in geriatric patients.¹
- Hyponatremia is a blood serum sodium level below 135 mEq/L.²⁻⁴
- In the elderly, SSRIs and diuretics are commonly prescribed. These are also known to increase the risk for hyponatremia.^{5,6,9}
- SSRIs are thought to cause hyponatremia by inducing the syndrome of inappropriate antidiuretic hormone secretion (SIADH).⁶
- Thiazide diuretics inhibit Na⁺ and CL⁻ symport in the distal convoluted tubules.⁷
- Thiazide diuretics also deplete potassium and cause urinary salt loss.⁸
- Both thiazides and SSRIs may reduce the renal free water clearance and stimulate antidiuretic hormone (ADH).^{7,8}

Aims

Examine the risk of hyponatremia among the elderly receiving SSRIs and thiazide diuretics.

Methods

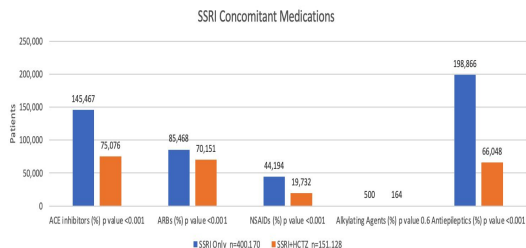
- Two retrospective nested case-control studies were conducted with exposure to an SSRI or a thiazide diuretic.
- Patients of interest include individuals receiving Medicare A, B, and D benefits from 2017 to 2019.
- Cases were individuals with a diagnosis of hyponatremia.
- Controls were patients taking either an SSRI or a thiazide diuretic.
- A logistic regression was conducted to determine the odds of hyponatremia. Data analysis was conducted using SAS.

SSRI Cohort

Table 1. SSRI Demographics

Characteristic	SSRI Only (N = 400,170)	SSRI + Thiazide (N = 151,128)	P-Value
Age (mean +/- SD)	77.8 (± 8.0)	77.0 (± 7.3)	<0.0001
Female (%)	276,158 (69.0)	112,311 (74.3)	<0.0001
Caucasian (%)	20,805 (73.2)	7,606 (26.8)	<0.0001

Figure 1. SSRI Concomitant Medications

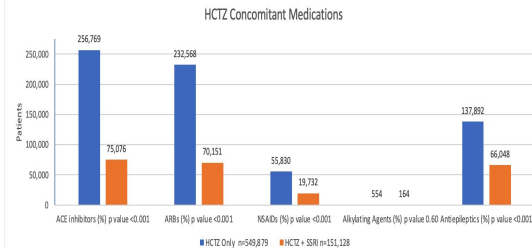


Thiazide Diuretic Cohort

Table 2. HCTZ Demographics

Characteristic	Thiazide Only (N = 549,879)	Thiazide + SSRI (N = 151,128)	P-value
Age (mean +/- SD)	77.1 ± 7.2	77.0 ± 7.3	<0.0001
Female (%)	331,228 (60.2)	112,311 (74.3)	<0.0001
Caucasian (%)	38,964 (83.7)	135,024 (89.3)	<0.0001

Figure 2. Thiazide Diuretic Concomitant Medications



Discussion

- In this retrospective study, we assessed the risk of developing hyponatremia when taking an SSRI and thiazide diuretic, in combination in the elderly.
- Taking an SSRI with a thiazide diuretic had an increased odds of developing hyponatremia and was found to be statistically significant with an odds ratio of 1.25 (CI 1.22-1.27; P<0.0001).
- Taking a thiazide diuretic with an SSRI had an increased odds of developing hyponatremia and was found to be statistically significant with an odds ratio of 1.26 (CI 1.24-1.28; P<0.0001).
- Our findings are consistent with previous studies in showing that SSRIs and thiazide diuretics increase the risk of hyponatremia.

Limitations

- Access to lab results was not available so diagnosis was used
- We could not measure adherence to medications
- There was no data concerning over-the-counter medication use

Conclusion

- Patients taking a SSRI with a HCTZ are at a 25% greater odds of developing hyponatremia
- Patients taking a HCTZ with a SSRI are at a 26% greater odds of developing hyponatremia
- The concurrent use of HCTZ and SSRIs is associated with a significantly increased risk of hyponatremia in the geriatric population.

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Table 3. SSRI Results (n=49,394)

Characteristic	Odds Ratio	95% CI
Thiazide Diuretics	1.25	1.22-1.27
Age	1.03	1.02-1.03
Sex	0.95	0.93-0.97
Race (B vs W) (O vs W)	1.20 0.82	1.15-1.24 0.79-0.86
ACEi	0.77	0.76-0.79
ARB	0.80	0.79-0.82
NSAID	1.06	1.03-1.09
Alkylating Agent	0.50	0.40-0.62
Antiepileptic	0.70	0.68-0.71
Charlson	1.27	1.26-1.27

Table 4 HCTZ Results (n=41,659)

Characteristic	Odds Ratio	95% CI
SSRI	1.26	1.24-1.28
Age	1.04	1.04-1.05
Sex	0.82	0.80-0.83
Race (B vs W) (O vs W)	1.06 0.65	1.03-1.10
ACEi	0.82	0.81-0.84
ARB	0.86	0.85-0.88
NSAID	1.01	0.98-1.04
Alkylating Agent	0.48	0.40-0.59
Antiepileptic	0.64	0.63-0.65
Charlson	1.29	1.28-1.29