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Letters to the Editor

Syndrome of Inappropriate Antidiuretic Hormone (SIADH) in COVID-19

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Coronavirus Disease 2019 (COVID-19) has inflicted a tremendous toll on humankind's morbidity and mortality since its emergence, resulting in 405 million confirmed cases and almost 5.8 million deaths as of February 11th, 2022 (1). Tiresome works of researchers lead us in the trajectory of ever-increasing understanding of possible grave consequences this disease may impose.

Syndrome of Inappropriate Antidiuretic Hormone (SIADH) results from a spectrum of disorders, including pneumonia, as a well-established cause. Cuesta et al. observed hyponatremia (≤ 130 mmol/L) in 8.3% of patients with community-acquired pneumonia (CAP). SIADH was the leading cause of hyponatremia in these patients, accounting for 46% of the cases (2). Thus, we hypothesize that COVID-19, as a novel cause of pneumonia, might mimic this aspect more or less.

Herein, we summed up five case reports and case series (accounting for eight patients) (3-7) Reported this syndrome in patients with COVID-19, one of which displaying SIADH as the sole presentation in a patient (6). Signs of COVID-19 pneumonia were evident in all the cases except the patients discussed above (**Table 1**). The diagnosis in each case was based on observing hyponatremia (Na< 135 mmol/L) with a euvolemic status, low serum osmolality (<280 mOsm/kgH2O), high urine osmolality (> 100 mOsm/ kgH2O), and high urine sodium content (> 40 mmol/L).

Other than common symptoms caused by COVID-19, case studies also reported dizziness and headache in one patient and disorientation and agitation in another. Six out of eight patients had severe hyponatremia (Na< 120) in the course

of their disease (**Table 1**). Life-threatening complications can precipitate in a patient with severe, symptomatic hyponatremia, either due to lack of adequate management or a rapid correction of the condition resulting in osmotic demyelination (8). Consensus guidelines suggest no more than 6-12 mEq/L of sodium level correction in the first 24 hours and no more than 18 mEq/L in 48 hours (9). Nevertheless, no imposed restrictions are suggested by the guidelines in the settings of acute symptomatic hyponatremia (restricted as chronic hyponatremia if there is any uncertainty about whether the condition is acute or chronic) (10).

Table 1. This table represents comprehensive data on each patient.

Patient number	Study (First author)	Age	Gender	Presenting symptoms	Na^+ (mmol/L)	Management of hyponatremia	Comorbidities	Radiologic Findings
1	Sheikh M.(3)	37	Male	Fever, Dry cough, Malaise	118	Fluid restriction of 1L/day	Not present	CXR: Pneumonitis patch in the peripheral region of the correct mid zone, Bilateral alveolar infiltrates (highly suggestive of COVID-19 pneumonia)
2	Gemcioglu E.(5)	65	Female	Dyspnea, Fever	134, after one day 124, on recheck 118	Fluid Restriction	Sarcoidosis, COPD, Hypertension, CHF with preserved EF	Chest CT: Chronic fibrotic modifications due to chronic pulmonary diseases, peripherally located ground-glass opacities in lungs bilaterally
3	Habib M. B.(6)	57	Male	Dizziness, Headache, Nausea, Fatigue	112	hypertonic saline 3% infusion, Fluid restriction	Hypertension, Type 2 Diabetes	CXR: No infiltrates
4	Ravioli S.(4)	80	Female	Dyspnea, Malaise	122	Fluid restriction, low dose loop diuretics and concomitant substitution of ongoing fluid losses	Not present	Chest CT: Bilateral ground-glass opacities in all lobes of the lung
5	Ravioli. S.(4)	62	Male	Cough, Fever	127	No management	Not present	Chest CT: Bilateral ground-glass opacities affecting all lobes of the lung
6	Yousaf Z.(7)	58	Male	Fever, Cough, Sore throat, Lethargy	116	Fluid restriction of 1.2 L/day	Hypertension, Dyslipidemia, Asthma	CXR: Bilateral perihilar infiltrates
7	Yousaf Z.(7)	20	Male	Fever, Cough, Nausea, Vomiting, Lethargy, disorientation, agitation	112	Fluid restriction of 700 ml/day and 300 ml Hypertonic saline	Not present	CXR: Increased broncho-vascular markings initially, organized infiltrates at 72 h
8	Yousaf Z.(7)	47	Male	Fever, Abdominal pain	117	Fluid restriction of 1 L/day	Not present	CXR: Bilateral perihilar infiltrates

CXR, Chest X-ray; COPD, Chronic obstructive pulmonary disease; CHF, Congestive heart failure; EF, Ejection fraction; CT, Computed Tomography

Conflict of interest

The authors confirm that they have no conflict of interest.

References

1. World Health Organization. WHO Coronavirus Disease (COVID-19) Dashboard [Available from: https://covid19.who.int/.
2. Cuesta M, Slattery D, Goulden EL, Gupta S, Tatro E, Sherlock M, et al. Hyponatraemia in patients with community-acquired pneumonia; prevalence and aetiology, and natural history of SIAD. Clin Endocrinol (Oxf). 2019;90(5):744-52.

3. Sheikh MM, Ahmad E, Jeelani HM, Riaz AMuneeb A. COVID-19 Pneumonia: An Emerging Cause of Syndrome of Inappropriate Antidiuretic Hormone. Cureus. 2020;12(6):e8841.
4. Ravioli S, Niebuhr N, Ruchti C, Pluess E, Stoeckli TLindner G. The syndrome of inappropriate antidiuresis in COVID-19 pneumonia: report of two cases. Clin Kidney J. 2020;13(3):461-62.
5. Gemcioglu E, Karabuga B, Ercan AErden A. A case of Inappropriate Antidiuretic Hormone Secretion Syndrome Associated with COVID-19 Pneumonia. Acta Endocrinol (Buchar). 2020;16(1):110-11.
6. Habib MB, Sardar SSajid J. Acute symptomatic hyponatremia in setting of SIADH as an isolated presentation of COVID-19. IDCases. 2020;21:e00859.
7. Yousaf Z, Al-Shokri SD, Al-Soub HMohamed MFH. COVID-19-associated SIADH: a clue in the times of pandemic! Am J Physiol Endocrinol Metab. 2020;318(6):E882-e85.
8. Sterns RH. Treatment of Severe Hyponatremia. Clin J Am Soc Nephrol. 2018;13(4):641-49.
9. Braun MM, Barstow CHPyzocha NJ. Diagnosis and management of sodium disorders: hyponatremia and hypernatremia. Am Fam Physician. 2015;91(5):299-307.
10. Verbalis JG, Goldsmith SR, Greenberg A, Korzelius C, Schrier RW, Sterns RH, et al. Diagnosis, evaluation, and treatment of hyponatremia: expert panel recommendations. Am J Med. 2013;126(10 Suppl 1):S1-42.