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Letter to the Editor

Syndrome of inappropriate antidiuretic hormone secretion associated with a SARS-CoV-2 pneumonia



Síndrome de secreción inadecuada de hormona antiurética asociado a una neumonía por SARS-CoV-2

Dear Editor,

A fifty-two year old man, without toxic habits and on treatment with an angiotensin-converting enzyme inhibitor for arterial hypertension and with no other previous diseases presented to the emergency room with cough and fever of 39 °C of ten days duration, and dyspnoea, reduced general condition and diarrhoea in the last 48 h. He did not refer contact with any subject testing positive for SARS-CoV-2 and he had been confined to his home for the last three weeks. Respiratory examination of the patient revealed bilateral basal crackles, with no other manifestations on the physical exam, including no dehydration signs or limbs oedema. In the emergency room, the patient normal blood pressure (SBP 149 mmHg–DBP 80 mmHg), fever (38.3 °C) and resting oxygen saturation of 92%. Peripheral bilateral infiltrates suggesting COVID-19 bilateral pneumonia were observed on x-ray examination. SARS-CoV-2 infection was confirmed by nasopharyngeal swabs. He was admitted to hospital. The first blood analysis showed: Na, 127 mmol/l; K, 3.7 mmol/l; glucose, 122.5 mg/dl; urea, 22.8 mg/dl, calculated plasma osmolality 268 mOsm/kg. Hyponatremia persisted for 48 h after admission with plasma Na 128 mmol/l and urine Na 77 mmol/L; urine K 65 mmol/l; urine osmolality 1228 mmol/kg. The rest of blood analysis showed abnormal parameters reflecting COVID-19 infection, such as: lymphocyte count $680 \times 10^9/L$, D-Dimer 880 ng/ml; lactate dehydrogenase 377 U/L; creatine kinase 824 U/L; C-reactive protein 47.9 mg/L. Room air arterial blood gases showed pH 7.48, pCO₂ 31 mmHg, pO₂ 63 mmHg and oxygen saturation of 92%. Thyroid hormone and basal cortisol levels were within the normal range. Empirical treatment for SARS-CoV-2 bilateral pneumonia was started following the local guidelines with hydroxychloroquine, azithromycin, ceftriaxone and lopinavir/ritonavir. The patient drank 1500 ml of water per day approximately and he did not take any hyponatremia-inducing drugs. SIADH was suspected on the basis of blood and urine tests and physical exam findings, and hypertonic saline and fluid restriction were prescribed, with normalization of serum sodium at day six of hospital admission. Clinical and radiological bilateral COVID-19 pneumonia improved and the patient was discharged after six days of admission.

SIADH is a common cause of hyponatremia in patients admitted to hospital. The median age of SIADH-associated aetiology is 70 years (range: 38–88). It is associated to higher

mortality and morbidity and with a delay in hospital discharge. SIADH diagnostic criteria include serum Na < 135 mmol/l, serum osmolality < 275 mOsm/kg, inadequate urine concentration > 100 mOsm/kg, the absence of hypo- or hypervolemia signs, urine Na > 40 meq/l with a salt and a normal fluid intake. Hypothyroidism, suprarenal insufficiency, renal failure or diuretic intake must be discarded.

The most frequent causes of SIADH include malignancies, lung diseases, different kinds of drugs and central nervous system disorders.

In 2003, hyponatremia associated to SARS infection was reported in 60% of patients.¹ Even though no specific data are available on the association of hyponatremia in SARS-CoV-2 infection, a recent study has described a 50% prevalence, although reporting a small number of patients.²

Previous studies have related SIADH to lung diseases reaching prevalence between 10 and 45% in patients affected by microcytic pulmonary carcinoma.³ Influenza type A virus infections have been related to SIADH in a few number of cases. In paediatrics, SIADH was detected in 18% of children under 12 month who were admitted for respiratory syncytial virus bronchiolitis, observing a higher incidence of pneumonia and intensive care requirements.⁴ The incidence of hyponatremia in patients admitted for community-acquired pneumonia was 8.3%, with a 46% of them caused by SIADH.⁵

We report this case to point to the importance of detecting the aetiology of hyponatremia due to treatment considerations. Current guidelines usually recommend caution with extra fluid therapy in patients with serious COVID-19 due to risk of respiratory distress. The finding that hyponatremia may be present in up to 50% of patients with COVID-19 admitted to hospital highlights the importance of a differential diagnosis including SIADH in this group of patients.

Conflict of interest

None.

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Lung ultrasonography unmasking the asymptomatic SARS-CoV-2 carrier



Utilidad de la ecografía pulmonar para detectar un portador asintomático de SARS-CoV-2

Dear Editor,

The 11th of March of 2020, the World Health Organization declared a pandemic caused by a novel coronavirus, named Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), with the spread to more than 180 countries, 37,418,821 cases confirmed and 1,076,818 deaths caused.¹

The disease severity spectrum is believed to be broad. Interestingly, according to different studies, many patients (40–80%) are asymptomatic at the time of testing,² and only few of them (0–10%) went on to develop symptoms. Researchers report that asymptomatic COVID-19 is more common among women and younger adults (median age 37) that could shed the virus for a median of 8 days.³

In this emergency, is critical the ability to quickly confirm these asymptomatic carriers to avoid transmission of the virus, especially in healthcare workers. For this reason, screening them for symptoms or unprotected exposures might not be effective.

We herein report the case of a 31-year-old woman with no significant past medical history. She is an emergency physician who had been working in the front line of our hospital treating Coronavirus Disease (COVID-19) patients since the beginning of the pandemic. She reported a close contact with a just confirmed COVID-19 patient in the household setting.

The physical exam was unremarkable, with normal lung auscultation. At that moment, a Point-of-Care Lung ultrasonography (LUS) was performed with a hand-held ultrasound device (Butterfly IQ – Butterfly Network, Guilford, CT, USA), following a twelve-zone scanning scheme of the anterior, lateral and posterior chest, showing a thickened and irregular pleural line with prominent B-lines in the left posterior lobe. The rest of the lung ultrasound showed an A-line pattern. A nasopharyngeal swab for SARS-CoV-2 test was done, being negative. Laboratory tests were unremarkable. Given her absence of symptoms, she refused to have a chest Computed Tomography (CT).

One month later, as a serology surveillance strategy was implemented at our hospital, she had a serology test with the presence of positive SARS-CoV-2 IgG and negative IgM (Chemiluminescence and Enzyme-Linked Immunosorbent Assay). At this moment LUS was repeated, with an improvement of the previous findings. Three months after the start of the pandemic, she remains asymptomatic.

There is growing literature regarding the usefulness of diagnostic imaging on COVID-19. A previous study found that chest CT scan abnormalities had a high sensitivity for diagnosis of COVID-19 patients,⁴ suggesting that CT scan should be considered as a screening tool, especially in epidemic areas with high pre-test probability.

However, for these asymptomatic carriers, radiation exposure and overuse of health care resources, or lack thereof ability to get a CT scan seems to overshadow the need.

LUS is innocuous, quickly completed following simple and easy to apply protocols and whose findings correlate excellent with CT scan.⁴

Prioritizing healthcare workers for Reverse Transcription Polymerase Chain Reaction (RT-PCR) test, serology test in addition to serial LUS exam, during these surveillance strategy campaigns, could more accurately diagnose the stage or time course of the COVID-19 infection, overcoming some of the limitations of the RT-PCR and serologic tests.⁵ This is essential, as especially false negative results could cause false reassurance, behaviour change and disease spread.

The main limitation is that LUS findings are not specific to SARS-CoV-2 infection, and the same abnormalities might be seen in other interstitial syndromes triggered by different causes that must be considered. However, in epidemic areas, these positive LUS features, even in asymptomatic or negative RT-PCR can still be highly suggestive of COVID-19 infection.

We want to share our case report findings, given the urgent need for different diagnostic strategies in order to identify asymptomatic SARS-CoV-2 carriers, especially healthcare workers, and mitigate community transmission of SARS-CoV-2.

In conclusion, the usefulness that LUS presents in this COVID-19 pandemic, especially in unmasking asymptomatic carriers is worth consideration. Further work integrating it in different surveillance strategies are needed before the release of the lockdown measures.

Authorship

All authors have contributed equally to this work.

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