Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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SCIENTIFIC LETTER

Acute adrenal insufficiency in a patient with panhypopituitarism after vaccination against COVID-19 (BNT162b2 Pfizer-BioNTech)

Insuficiencia suprarrenal aguda en paciente con panhipopituitarismo posterior a la vacunación contra la COVID-19 (BNT162b2Pfizer-BioNTech)

The process of vaccinating the general population against COVID-19 (type 2 coronavirus that causes severe acute respiratory syndrome) is constantly evolving in terms of knowledge and learning and the eventual need to combine evidence and clinical experience to answer new questions. For this purpose, we present the following case of a 73-year-old woman with a personal history including panhypopituitarism secondary to a pituitary macroadenoma, surgically resected in 1982. Due to recurrence, she subsequently required radiotherapy and a new resection in 2004. Since then, she has been receiving hydrocortisone replacement therapy and thyroid hormone therapy. She has had several Addisonian crises, the last one in 2020 during hospitalisation for COVID-19 pneumonia, which was related to abandonment of treatment and the acute stress condition typical of the infectious process. Bronchial asthma, ischaemic heart disease and chronic kidney disease also stand out in her personal history.

She went to A&E due to an acute deterioration in her state of consciousness, with hypoglycaemia of 63 mg/dl observed at home, which was later resolved with the administration of glucagon. Upon arrival, she was stuporous and in poor general condition, accompanied by hypotension and abdominal pain. The initial history was difficult due to the patient's confusional state. Treatment was started with intravenous fluid replacement with high-dose glucosamine and hydrocortisone solution, which resulted in a rapid improvement in her condition with the recovery of consciousness and normalisation of blood pressure and blood glucose, and she was admitted to endocrinology.

The patient said she had been taking her usual medication and denied experiencing events that could act as precipitating factors. However, it was found that one day before the onset of symptoms, she was administered the first COVID-19 vaccine (Pfizer) dose, which could have triggered a flu-like subclinical condition since the patient herself described it as intense asthenia, without having increased the doses of hydrocortisone. This makes it the only relevant past history and possible trigger of the current Addisonian crisis. During her admission, a complete analytical study and urine sediment test was performed, without identifying intercurrent infectious processes, in addition to a normal abdominal ultrasound. Given the resolution of her clinical symptoms and the normality of the complementary tests, she was discharged with adjustments to the baseline treatment and specific recommendations to increase the requirements for the second dose of the vaccine.

However, again coinciding with the administration of the said dose, and without identifying another possible trigger, a new hospital admission was required due to symptoms compatible with a new adrenal crisis (low level of consciousness with TBI, hypoglycaemia, hypotension and self-limited fever peak) despite complying with the previous recommendations described, which the family confirmed. Similarly, as before, she subsequently responded favourably to treatment and was discharged.

In the available literature on the BNT162b2 vaccine, they report that local adverse effects are relatively common, mainly after the second dose and in the first two days after the administration of the vaccine. General effects such as arthralgia, asthenia, myalgia and mild-to-moderate respiratory symptoms have also been identified and, less commonly, anaphylactic reactions.[1] In addition, some studies suggest a greater immune response and frequency of adverse events with the first dose in patients who have previously had COVID-19 compared to those who have not,[2] as was the case with our patient.

The Sociedad Española de Endocrinología y Nutrición [Spanish Society of Endocrinology and Nutrition] reports that patients with adrenal insufficiency do not have a higher risk of adverse effects after vaccination, and recommend its administration than the rest of the general population. Increasing the corticosteroid dose is not specifically recommended.[3]

According to a survey of professional members of the Pituitary Society, most clinicians do not suggest increasing these requirements with vaccination. However, they may recommend it if the patient develops any symptoms. However, it is recognised that more studies are needed to provide evidence of the need or not of this increase as prophylaxis against possible Addisonian crises.[4]

In this case, the only situation identified that justifies the adrenal crisis is the previous vaccination, which could have caused a situation of acute stress that, not being supplemented by an extra dose of corticosteroid, caused the aforementioned clinical picture, while knowing that there is great interpersonal variability in people's post-vaccine reaction, ranging from local discomfort to self-limited flu-like symptoms. Considering what has been described in our patient, supervision of an increase in replacement require-

ments, when indicated, was recommended at discharge, as well as the possibility of a parenteral hydrocortisone regimen before administering future doses of COVID-19 vaccines. In certain situations of acute stress, it is recommended to double or triple the usual dose of corticosteroids in this type of patient, the indication being clear in cases of surgery, severe or moderate infections, vomiting, diarrhoea and fever of more than 38 °C. In milder situations, such as upper respiratory tract infection, fever less than 38 °C and general malaise, it is more debatable and may not be necessary for most patients.[5] Likewise, there is no clear indication for increasing the dose before the routine administration of vaccines. More studies are necessary since patients with autoimmune adrenal insufficiency are candidates for routine vaccination to avoid serious infections that can trigger the aforementioned crises.

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Non-endocrine hyperaldosteronism. When hormones are supporting players

Hiperaldosteronismo no endocrino. Cuando las hormonas son actores secundarios

The discovery of persistent hypokalaemia in a young patient without evidence of self-induced or clearly obvious losses (from diuretics, laxative abuse or vomiting) includes evaluation of the renin-aldosterone axis. The detection of an excess of aldosterone makes primary aldosteronism the first suspicion, but it includes a wide diagnostic range that is not always evident. We present the case of a female patient referred for study due to hypokalaemia with very high aldosterone levels. We describe her diagnostic course until the surprising final diagnosis.

After undergoing tests, the 31-year-old patient was sent to another centre to detect low potassium levels (K): 3.11 mmol/l in an episode of orthostatic dizziness treated in the emergency department. She had no history of interest, except for asthma treated intermittently with budesonide inhalers. She underwent extensive tests that included analytical tests, a normal colonoscopy, an abdominal CT scan with normal adrenal glands and kidneys, and even a psychiatric consultation ordered by Nephrology to rule out surreptitious vomiting. She denied recent use of budesonide or previous or current use of diuretics or laxatives. Physical examination was unremarkable, with normal phenotype, body mass index (BMI) of 21 kg/m^2 and blood pressure (BP) of 95/60 mmHg, with no other findings of interest. Various ions in plasma and urine tests were performed, with plasma potassium levels without supplementation between 2.85 and 3.3 mmol/l, calorie counts in the normal range (40—55 mmol/24 h) and very high plasma aldosterone levels with concomitant elevated renin. The most recent test showed the following values: K 3.27 mmol/l; sodium (Na) 140 mmol/l; orthostatic aldosterone 1478 pmol/l (upper limit of normal [ULN] 997); plasma orthostatic renin activity 11.9 ng/mL/h (ULN 4.8); diuresis of 1.650 ml with Na 188 mmol/24 h and K 45 mmol/24 h. She had received empirical treatment with spironolactone, which was poorly tolerated due to dizziness and polyuria. Reassessment with 24 mEq/day of daily oral potassium supplementation showed orthostatic aldosterone of 1.680 pmol/l with renin (mass) of 352 mU/l (ULN 46.1) and K 3.6 mmol/l. An extended blood and urine test was requested to maintain potassium supplements, which are shown in Table 1. Given the results, a possible renal loss was suggested with criteria compatible with Gitelman syndrome without hypomagnesaemia. Sequencing of the *SLC12A3* gene showed a homozygous mutation (variant c.812T > C) in the *SLC12A3* gene, present in heterozygous form in both parents, without clinical expression in both or consanguinity.

The evidence of a persistent hypokalaemic alkalosis in a young patient without simultaneous arterial hypertension (AHT) prompts us to rule out the surreptitious intake of laxatives, diuretics or self-induced vomiting, as