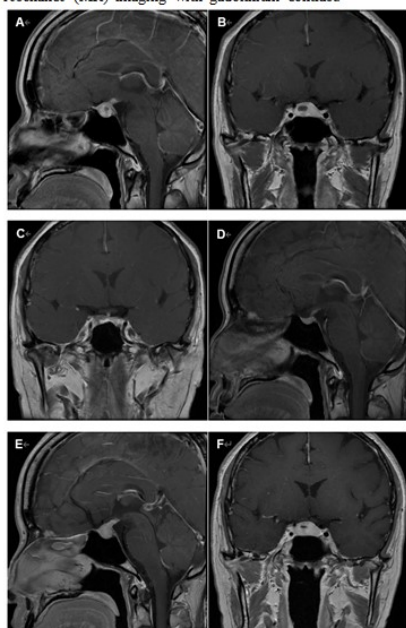


A Case of Hypophysitis After SARS-CoV-2 Vaccination

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Various endocrinopathies following severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) vaccination have been increasingly reported worldwide. Here, we report a rare case of hypophysitis after SARS-CoV-2 vaccination. A 43-year-old woman with no known medical illness presented to the outpatient clinic with a three-month history of amenorrhea and polyuria. Her last menstrual period was one month before the first SARS-CoV-2 vaccination. Vital signs were stable on presentation: pulse 82 bpm, blood pressure 123/77 mmHg, and temperature 36.5 °C. Initial serum osmolality was in the upper range (294 mmol/kg), while urine osmolality and antidiuretic hormone levels were decreased (63 mmol/kg and 0.9 pg/mL, respectively). Elevated prolactin levels (77.0 ng/mL) and decreased follicle-stimulating hormone, luteinizing hormone, and estradiol levels (6.7 IU/L, 4.4 IU/L, and <5 pg/mL, respectively) were detected, while other pituitary hormones were within normal ranges (Table 1). Magnetic resonance imaging (MRI) revealed diffuse swelling of the pituitary stalk with heterogeneous enhancement (Figure 1A-B). Based on these findings, hyperprolactinemia and diabetes insipidus due to hypophysitis were suspected. The patient was treated with prednisolone, desmopressin, and cabergoline, leading to improvement of polyuria and the restoration of menstruation. MRI two months after treatment showed a marked reduction in pituitary size and enhancement (Figure 1C-D). However, after the medications were gradually tapered off (10 months post-treatment), polyuria recurred and follow-up MRI revealed an increase in pituitary size and enhancement, suggesting a recurrence of hypophysitis (Figure 1E-F). Medications were restarted and surgical treatment has been considered in case of worsening of symptoms. This unique case report of hypophysitis following the vaccination is the first domestic report to our knowledge. There is a need for increased vigilance in monitoring for potential rare adverse events following vaccination and a call for further research to better understand the underlying mechanisms and risk factors associated with such complications.

Figure 1. Sagittal (left column) and coronal (right column) T1-weighted brain magnetic resonance (MR) imaging with gadolinium contrast



A-B, The MR images at the time of diagnosis show diffuse swelling of the pituitary stalk with heterogeneous enhancement; C-D, The MR images two months after treatment show a marked decrease in the heterogeneously enhancing mass of the pituitary gland and stalk with residual focal heterogeneous enhancement in the right side of the pituitary gland since the last imaging; E-F, The MR images ten months after treatment show diffuse swelling of the pituitary gland with heterogeneous enhancement and thickening of pituitary stalk.

Table 1. Laboratory values at the time of diagnosis and during treatment

Laboratory parameter	At the diagnosis	After 5 months	After 10 months	Reference range
Serum osmolality (mmol/kg)	294	299	283	285~294
Urine osmolality (mmol/kg)	63	143	-	300~900
ADH (pg/mL)	0.9	1.3	-	<14.0
Prolactin (ng/mL)	77.0	53.3	<0.6	5.2~26.5
IGF-1 (ng/mL)	-	173	-	84.9~229
ACTH (pg/mL)	16.2	4.1	12.5	4.7~48.8
LH (IU/L)	4.4	3.6	6.8	-
FSH (IU/L)	6.7	4.6	9.8	-
Cortisol (μg/dL)	11.7	0.7	1.7	-
Estradiol (pg/mL)	<5.0	-	46.9	-
TSH (uIU)	1.1	1.4	<0.1	0.4~4.7
Free T4 (ng/dL)	1.1	1.2	1.2	0.8~1.9

ACTH, adrenocorticotropic hormone; ADH indicates antidiuretic hormone; FSH, follicle stimulating hormone; IGF-1, insulin-like growth factor; LH, luteinizing hormone; TSH, thyroid stimulating hormone; free T4, free thyroxine.