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Case Report

Biochemistry Section

Panhypopituitarism Presenting with Non Specific Symptoms in a Geriatric Patient: A Case Report

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ABSTRACT

Panhypopituitarism is a rare condition in which there is a deficiency of all the hormones released by the pituitary gland. It can occur at any age, from infants and children to adults. The pituitary hormones are responsible for several important functions in the body, such as metabolism, growth and reproduction. A 71-year-old female presented with symptoms of nausea, aversion to food and significant weight loss over the past month. Her past medical history included spine surgery five years ago, a hysterectomy 35 years ago and she was a known case of systemic hypertension. Initial evaluations revealed normal vital signs and stable cardiovascular and respiratory functions, but laboratory tests showed markedly low levels of Thyroid Stimulating Hormone (TSH), free T4, cortisol, Adrenocorticotropic hormone (ACTH), Follicular Stimulating Hormone (FSH) and Luteinising Hormone (LH). A brain Magnetic Resonance Imaging (MRI) revealed pituitary hyperplasia without focal lesions, leading to a diagnosis of panhypopituitarism, characterised by central hypothyroidism, adrenal insufficiency and gonadotropin deficiency. The diagnosis of panhypopituitarism in this case was challenging due to the non specific nature of the presenting symptoms. The patient's hormonal profile revealed deficiencies in multiple pituitary hormones, which aligned with the diagnosis of panhypopituitarism secondary to pituitary hyperplasia. Treatment with intravenous hydrocortisone and thyroid hormone replacement therapy was initiated, resulting in significant clinical improvement. Timely hormone replacement therapy led to favourable outcomes. Long-term follow-up is crucial to ensure continued hormone balance and prevent complications.

Keywords: Elderly patients, Endocrine disorder, Multihormonal deficiency, Pituitary hyperplasia

CASE REPORT

A 71-year-old female patient presented with symptoms of nausea, loss of appetite and substantial weight loss over the last month. She was a known case of systemic hypertension and has been on treatment for the past 20 years. She underwent a hysterectomy 35 years ago and spine surgery five years ago. There was no history of type 2 diabetes, bronchial asthma, chronic kidney disease or tuberculosis.

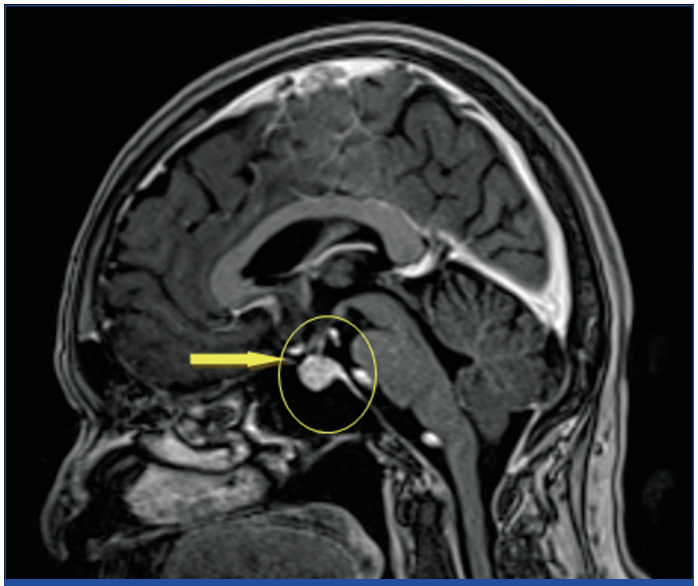
Upon admission, the patient was conscious, oriented and afebrile, without indications of pallor, icterus, cyanosis, clubbing, lymphadenopathy, or pedal oedema. Vital signs were stable and within normal ranges, suggesting steady cardiovascular and respiratory function. A slightly low haemoglobin level (11 g/dL) suggested possible normocytic anaemia, often associated with chronic disease or endocrine disorders such as hypothyroidism, but was not of a severe nature. Other haematological parameters were within normal ranges, including total count and platelet count. Additionally, sodium and potassium levels were found to be within normal limits, thus ruling out significant electrolyte imbalances.

The laboratory analysis results, as shown in [Table/Fig-1], indicated low levels of TSH (0.05 µIU/mL) and free T4 (0.75 ng/dL), suggesting dysfunction in the hypothalamus or pituitary gland rather than a primary thyroid issue. Furthermore, the markedly low levels of serum cortisol (<1.0 µg/dL) and ACTH (7.3 pg/mL) were consistent with secondary adrenal insufficiency, indicating inadequate ACTH production by the pituitary gland. Additionally, the significantly low FSH levels (0.35 mIU/mL) and low LH suggested gonadotropin deficiency, reflecting insufficient production of multiple hormones by the pituitary gland. An MRI of the brain revealed an enlarged pituitary gland with intense contrast enhancement in the sella region, indicating pituitary hyperplasia without a focal lesion, as shown in [Table/Fig-2]. The concurrent low levels of TSH, free T4, cortisol, ACTH, FSH and LH, along with MRI findings indicating an enlarged

Investigation	Result	Reference range
Haemoglobin (g/dL)	11	12.0-15.5
Packed cell volume (%)	34	36-46
Total Count (TC) (/mm³)	10,200	4,000-11,000
Platelet count (/mm³)	3,67,000	150,000-450,000
Mean Corpuscular Volume (MCV) (fL)	86	80-100
Mean Corpuscular Haemoglobin (MCH) (pg)	28	27-32
Mean Corpuscular Haemoglobin Concentration (MCHC) (g/dL)	33	31-36
Random Blood Sugar (RBS) (mg/dL)	117	70-140
HbA1c (%)	6.1	4.0-5.6
Sodium (mEq/L)	136	135-145
Potassium (mEq/L)	3.7	3.5-5.0
Calcium (mg/dL)	9.2	9-11
Phosphorous (mg/dL)	3.7	2.5-4.3
Magnesium (mg/dL)	1.5	1.5-2.3
Urea (mg/dL)	11	15-40
Creatinine (mg/dL)	1.1	0.7-1.3 male 0.6-1.2 female
Total bilirubin (mg/dL)	0.72	0.2-1.0
Direct bilirubin (mg/dL)	0.55	0.1-0.4
Aspartate Aminotransferase (AST) (U/L)	38	8-20
Alanine Aminotransferase (ALT) (U/L)	23	5-40
Total Protein (g/dL)	5.9	6.0-8.0
Albumin (g/dL)	3.5	3.5-5.0
Globulin (g/dL)	2.4	2.5-3.5

Alkaline Phosphatase (ALP) (U/L)	40	40-120
Gamma-glutamyl Transferase (GGT) (U/L)	25	40-125
Thyroid Stimulating Hormone (TSH) (µIU/mL)	0.05	0.4-4.2
Free T4 (ng/dL)	0.75	0.8-2.0
S. Thyroid peroxidase antibody	0.4	<9
S. Cortisol (µg/dL)	<1.0	5-25
S. Adrenocorticotropic Hormone (ACTH) (pg/mL)	7.3	10-60
S. Follicular Stimulating Hormone (FSH) (mIU/mL)	0.35	25.8-134.8 (Postmenopausal)
S. Luteinising Hormone (LH) (mIU/mL)	3.2	7.7-58.5 (Postmenopausal)
Anti-Human Immunodeficiency Virus (HIV)	Non reactive	Non reactive
Anti-Hepatitis C virus	Non reactive	Non reactive
HBsAg	Non reactive	Non reactive

[Table/Fig-1]: Laboratory investigations and hormonal assessment in a patient with suspected panhypopituitarism.



[Table/Fig-2]: MRI brain sella: Pituitary gland appears enlarged measuring 1.4*1.3*1.0 cm (TR*AP*CC) which is showing intense homogenous contrast enhancement. No evidence of focal lesion- suggestive of pituitary hyperplasia.

pituitary gland, confirmed the diagnosis of panhypopituitarism. Differential diagnosis may include Sheehan syndrome, gliomas and empty sella syndrome. According to the laboratory results and MRI findings, these differential diagnosis were ruled out.

The treatment regimen commenced with the administration of intravenous hydrocortisone 20 mg once daily for five days to address adrenal insufficiency, coupled with the initiation of thyroid hormone replacement therapy using Levothyroxine 25 µg once daily for hypothyroidism.

After the commencement of intravenous hydrocortisone and thyroid hormone replacement, the patient exhibited marked improvement. Her nausea decreased and she began to regain her appetite. Upon discharge, the patient demonstrated haemodynamic stability, normal vital signs and alleviated symptoms. She was discharged with a tapered oral hydrocortisone regimen of 10 mg in the morning and 5 mg at night for one month, along with continued thyroid hormone replacement. A follow-up appointment at the endocrinology outpatient department was scheduled for five days later to evaluate fasting serum Growth Hormone (GH) and prolactin levels and determine the necessity for further hormone adjustments. The patient had symptomatically improved by the time she was discharged after an eight-day admission.

The early diagnosis and timely initiation of hormone replacement therapy resulted in a favourable outcome. The patient's improvement reflects the importance of promptly addressing adrenal insufficiency and thyroid dysfunction in cases of panhypopituitarism. Long-term follow-up over the course of one year has been crucial to ensure proper hormone balance and prevent complications. The last follow-up was conducted one month ago, during which the patient's symptoms were resolved.

DISCUSSION

Panhypopituitarism is a rare but significant endocrine disorder characterised by the deficiency of multiple pituitary hormones [1]. The condition often presents with non specific symptoms, making early diagnosis challenging, especially in elderly patients [2]. This disorder is characterised by diminished secretion of multiple pituitary hormones, resulting in central hypothyroidism, adrenal insufficiency and gonadotropin deficiency [3]. The aetiology of panhypopituitarism may involve pituitary gland damage caused by tumours, radiation, surgery, or infiltrative diseases [4]. Differential diagnosis may include Sheehan syndrome, gliomas and empty sella syndrome. Treatment typically involves hormone replacement therapy, specifically hydrocortisone, along with addressing the underlying cause [5].

This case study delves into the clinical scenario of a 71-year-old female patient diagnosed with panhypopituitarism. The patient presented with symptoms including nausea, anorexia and significant weight loss, which correlate with existing literature on the subject. These symptoms, characterised by a gradual diminution in appetite and episodes of nausea, exemplify the often-vague presentation in such cases, leading to diagnostic delays. Laboratory investigations revealed diminished levels of TSH (0.05 µIU/mL), free T4 (0.75 ng/dL), cortisol (<1.0 µg/dL), ACTH (7.3 pg/mL), FSH (0.35 mIU/mL) and LH (3.2 mIU/mL), indicative of a hypothalamic or pituitary origin rather than a primary thyroid dysfunction. The diagnostic challenge was heightened by the lack of a focal pituitary lesion and the presence of diffuse pituitary enlargement. Initial imaging failed to reveal any definitive structural abnormalities, highlighting the difficulties in diagnosing pituitary dysfunction when common radiological markers are absent [6].

The simultaneous reduction in multiple hormone levels underscores the intricacies of managing such endocrinopathies. A study noted that normal serum electrolytes do not negate the possibility of cortisol deficiency, stressing the importance of thorough evaluations in suspected adrenal insufficiency. Additionally, the literature indicates that patients with untreated hormonal deficiencies often suffer increased incapacity and diminished quality of life [7]. Panhypopituitarism, characterised by reduced secretion of several pituitary hormones, leads to central hypothyroidism, adrenal insufficiency and gonadotropin deficiency [8]. In this case, MRI findings of pituitary enlargement with marked contrast enhancement in the sella turcica suggested pituitary hyperplasia without focal lesions, which is a vital diagnostic feature for distinguishing between different pathologies of pituitary dysfunction and supporting a diagnosis of hyperplasia over neoplastic processes [9].

In contrast, a 59-year-old man with a history of hyperlipidaemia presented with panhypopituitarism after experiencing two episodes of syncope, nausea and ongoing hypotension. Imaging identified a sellar mass featuring calcifications and suprasellar extension, consistent with a pituitary macroadenoma. The mass effect led to secondary adrenal insufficiency, central hypothyroidism and hypogonadism. The clear identification of the lesion allowed for a prompt diagnosis and the initiation of hormone replacement therapy with hydrocortisone and levothyroxine [10]. Similarly, studies by Caputo M et al., have concluded that the differential diagnosis of sellar and parasellar masses causing hypopituitarism

should include primary pituitary lymphoma, even in the absence of systemic symptoms or posterior pituitary dysfunction [11]. The study conducted by Humes K, concluded that panhypopituitarism is a rare, life-threatening condition due to the deficiency of multiple pituitary hormones. A thorough history and physical examination, coupled with serum testing for pituitary hormones, can elicit the diagnosis. Although symptomatology varies, the most pressing and dangerous manifestation is ACTH deficiency [12].

Given the complexity of managing multifaceted hormone deficiencies, a multidisciplinary approach involving endocrinologists well-versed in these disorders is crucial.

CONCLUSION(S)

The case pertains to a presentation of panhypopituitarism in an elderly female patient, characterised by adrenal insufficiency, hypothyroidism and hypogonadotropism. It highlights the importance of early identification in patients presenting with non specific symptoms such as nausea and weight loss. Laboratory findings confirmed significant hormonal deficiencies, necessitating the prompt initiation of hormone replacement therapy, which resulted in substantial improvement in symptoms. This case underscores the significance of a comprehensive approach to endocrine disorders, ensuring optimal patient outcomes through thorough assessment and management.

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