Hypopituitarism

Case study involving hypernatremia prompting discovery of a pituitary disorder in a patient with lymphoma

Jace D. Johnny, BSN, RN, OCN®, CCRN

BACKGROUND: The endocrine system contributes to numerous physiologic processes. Compensatory mechanisms are in place that can assist when endocrine dysfunction occurs, which may make it difficult to identify pathologic states.

OBJECTIVES: The case study in this article presents a 74-year-old woman with diffuse large B-cell lymphoma who was admitted to an oncology critical care unit with neutropenic fevers and suspicion of gastrointestinal bleeding. She was placed on NPO status (no oral intake) overnight and quickly developed hypernatremia. This prompted further investigation, resulting in the discovery of hypopituitarism.

METHODS: A case study illustrates how altered endocrine function can contribute to rapid patient deterioration beyond hypothyroidism, diabetes, or other common endocrine conditions.

FINDINGS: Compensatory mechanisms involving the endocrine system can mask dysfunction, which can cause providers to miss signs of altered endocrine function. Experienced clinical nurses should use critical thinking and assessment skills to monitor patients for abnormal signs and symptoms.

KEYWORDS
lymphoma; hematology; oncologic emergencies; endocrinology

DIGITAL OBJECT IDENTIFIER
10.1188/18.CJON.E115-E119

THE PITUITARY GLAND IS A CRITICAL ORGAN of the endocrine system affecting many physiologic processes, including maintenance of metabolic, fluid, and electrolyte homeostasis; regulation of cellular production and growth; external stimuli response, which is particularly important in stress states; control of reproduction; and collaboration with the autonomic nervous system in the control and maintenance of circulatory and digestive activities (Johnstone, Hendry, Farley, & McLafferty, 2014). Because of the large number of functions the endocrine system is responsible for, an alteration could be disregarded or attributed to another condition.

This article discusses a case study of a 74-year-old woman with recently diagnosed stage IV diffuse large B-cell lymphoma (DLBCL) who presented to an oncology critical care unit with suspicion of gastrointestinal bleeding. Overnight, she was placed on NPO status (no oral intake), and quick onset of hypernatremia prompted further investigation that resulted in the discovery of hypopituitarism.

Hypopituitarism is a condition in which a deficiency is present in hormones produced by the pituitary gland, ranging from a single hormone to all hormones (termed *panhypopituitarism*). Hypopituitarism is a rare disorder with an incidence rate of 42 cases per million per year (Burt & Ho, 2016). Causes of hypopituitarism are based on the location of defect. Primary hypopituitarism is caused by a condition that affects the pituitary gland directly. Etiologies of primary hypopituitarism include conditions that induce injury (e.g., radiation, ischemia, infection, neoplastic infiltration) or surgical removal. Conditions affecting the pituitary stalk or hypothalamus result in an indirect effect on the pituitary gland, which can lead to secondary hypopituitarism (Kim, 2015).

The anterior pituitary gland is made of epithelial tissue stimulated by hormones released by the hypothalamus. Anterior pituitary gland secretion results in the release of thyroid-stimulating hormone (TSH), prolactin, adrenocorticotropic hormone (ACTH), follicle-stimulating hormone (FSH), luteinizing hormone (LH), and growth hormone (GH). The anterior pituitary is known as the master gland because these hormones are released into general circulation to target and stimulate other endocrine organs. In contrast, the posterior pituitary gland consists of neural tissue, which is stimulated by an action potential from the hypothalamus. Posterior pituitary gland secretion results in the release of oxytocin and antidiuretic hormone (ADH) (Johnstone et al., 2014).

Depending on which hormones are affected, clinical manifestations have a range of severity; most often, presentation is nonspecific and vague. Clinical