

Introduction to Endocrine Focus Series

LINDA S. GORMAN, JANELLE M. CHIASERA

Clin Lab Sci 2013;26(2):106

Linda S. Gorman, PhD, MLS (ASCP)^{CM}, University of Kentucky, Lexington, KY

Janelle M. Chiasera, PhD, MT (ASCP), University of Alabama at Birmingham, Birmingham, Alabama

Address for Correspondence: Linda S. Gorman, PhD, MLS (ASCP)^{CM}, CLS Education Co-ordinator, Associate Professor, 900 S. Limestone Ave, Rm 126G CTW, University of Kentucky, Lexington, KY 40536-0200, (859)-218-0855, lsgorm0@uky.edu

The endocrine system is a complex system responsible for regulating many body functions through an elaborate network of hormones. The field of endocrinology enjoys a rather rich history; but it is a young history. Terms such as hormone and endocrinology were introduced in 1905 and 1909, respectively, and the study of endocrine function began in the late nineteenth century (1890 – 1905). The first comprehensive endocrinology textbook was published in 1913 and since that time, growth in the field of endocrinology has been exponential. As a result of the complex nature of the endocrine system, the diagnosis, management, and treatment of endocrine disturbances have always been challenging. Laboratory diagnosis has ranged from a panel of laboratory tests including total and free hormone levels, uptake tests, and stimulation tests to definitive guidelines for diagnosing endocrine disturbance using sometimes fewer than two laboratory tests.

Of the hormone assays performed in clinical chemistry, the most common are those associated with the thyroid gland. Numerous vendors have found ways to

incorporate the thyroid hormone testing on automated platforms. Less common but equally called for are the hormone assays associated with the adrenal gland. The foundation of the hormone physiology is the negative feedback mechanism. Both thyroid hormones and adrenal hormones demonstrate this mechanism. Both have hypothalamic and pituitary hormones that respond to the gland-produced hormone in a negative feedback way.

This series of articles examines the physiology and pathology associated with thyroid and adrenal hormones. How these hormones impact our metabolism normally and in disease states can be confusing and puzzling. This series of three articles will provide you with an overview of the complexity of the endocrine system and the details of structure, function, and pathology for two major endocrine organs, the thyroid and adrenal glands.

The first article looks at the negative feedback mechanism and gives an overview of the relationship between the hypothalamus, the pituitary and endocrine glands, in general. This article sets the stage for understanding the negative feedback mechanism and how it works. The second article looks at the thyroid gland and in more detail describes the physiology and pathology of this gland system. The utilization of laboratory testing to define the deficiencies and excesses of thyroid hormones in disease states demonstrates how this information aids the physicians in the diagnosis of thyroid disease. The third article examines the adrenal gland system, both the cortex and medulla, as to how these hormones affect normal metabolism. This article also looks at the various disease states associated with the adrenal gland hormones and delineates the laboratory testing that aids in diagnosis.