

LAB 12

ENDOCRINE II

Assignments:

Quiz : Endocrine Chart – pages 112-114

Due next lab:

Lab Exam 3 – covers labs 11 and 12, endocrine chart and endocrine case studies (1-4 and 7).

Objectives:

Review the Case Studies (You will be tested on Case Studies 1-4 and 7)

Review Endocrine Chart

Complete any additional lab material not covered in the previous week

Review for Lab exam

CHART OF ENDOCRINE ORGANS

Hormone	Gland produced	Target organ(s)	Stimulus for release	Function	Disorders Hypo/Hypersecretion
ADH					
Oxytocin (OT)					
Growth Hormone (GH)					
TSH Thyroid Stimulating Hormone					
ACTH					
LH					
FSH					

Hormone	Gland produced	Target organ(s)	Stimulus for release	Function	Disorders Hypo/Hypersecretion
Prolactin (PRL)					
Thyroid Hormone T ₃ and T ₄					
Calcitonin (CT)					
Parathyroid Hormone (PTH)					
Epinephrine (Epi)					
Cortisol					
Aldosterone					

Hormone	Gland produced	Target organ(s)	Stimulus for release	Function	Disorders Hypo/Hypersecretion
Sex Hormones from adrenal cortex T & E					
Insulin					
Glucagon					

- I. What would be a possible treatment for his condition?
2. A 45-year old male from the Midwest presented with the following symptoms during February: weakness, fatigue, orthostatic hypotension, weight loss, dehydration, and decrease cold tolerance. His blood chemistry values follow:

Serum sodium	128 mEq/L	normal 136-139
Serum potassium	6.3 mEq/L	normal 3.5-5.0
Fasting blood glucose	65 mg/dL	normal 70-110

Hematocrit: 50 %

Leukocytes: 5,000 mm³

He also noticed increased pigmentation (tanning) of both exposed and nonexposed portions of this body and back. A plasma cortisol determination indicated a low cortisol level. Following administration of ACTH, plasma cortisol did not rise significantly after sixty to ninety minutes. Endogenous circulating levels of ACTH were later determined to significantly elevated.

- A. What endocrine organ is the site of the malfunction?
- B. Is this a primary or secondary disturbance? How do you know?
- C. What is the name of this disorder?
- D. Discuss the electrolyte disturbances resulting from this disorder (normal vs. diseased).
- E. Discuss the glucose disturbances resulting from this disorder (normal vs. diseased).
- F. What is the cause of the tanning?
- G. What type of replacement therapy would be required for this individual?
- H. Describe the feedback loop for this endocrine disorder. Where is the loop broken?

3. A 38-year old female visits her doctor complaining of chronic fatigue and weakness, especially in her legs. Upon greeting the patient, the doctor notes that although she is mildly obese, there is an unusually round contour to her face. During questioning, he learns that at her recent 20-year high school reunion, nobody recognized her because her face looked so different. Physical examination yields an unusual fat distribution consisting of a hump on the upper back and marked centripetal obesity. Blood pressure is also abnormally high.
 - A. What is your diagnosis?
 - B. Explain how you reached this diagnosis.

4. Mr. Jessup, a 55-year old man, is operated on for a cerebral tumor. About a month later, he appears in his physician's office complaining of excessive thirst. He claims to have been drinking about 20 liters of water daily for the past week and voiding nearly continuously. A urine sample is collected, its specific gravity is reported at 1.001.
 - A. What is your diagnosis?
 - B. Explain both types of diabetes and how they are different. Use your text- both renal and endocrine chapters.
 - C. Explain both types of diabetes insipidus.

5. A 36-year old mother of four is considering tubal ligation as a means of ensuring that her family gets no larger. She asks the physician if she will become "menopausal" after the surgery. How would you answer her question and explain away her concerns.

6. A woman who is taking birth-control pills that consist of only progesterone experiences the hot flash symptoms of menopause. Explain why.

7. Sharon went to her doctor with the following symptoms: dull facial expressions; droopy eyelids; puffiness of the face; sparse, dry hair; scaly skin; evidence of intellectual impairment; lethargy; a change of personality; bradycardia (60 b/min); a blood pressure of 90/70; anemia (Hct 27); constipation and hypothermia. Plasma concentrations of T_3 and T_4 were low and TSH levels were elevated. Following administration of exogenous TSH, plasma T_3 and T_4 did not rise after 2 hours.

- A. What is the disorder?
 - B. Is this a primary or secondary disorder?
 - C. Would you expect to find a palpable goiter? Explain
 - D. Describe the feedback loop involved. Where is the loop broken?
 - E. Describe a suitable treatment for Sharon.
8. Mary Francis had a total thyroidectomy followed by thyroid hormone replacement therapy. A few days later she developed laryngeal spasms, a mild tetany, and cramps in the muscles of the hands and arms. The following tests were performed:

Urinary calcium 20 mg/dL	Urine phosphorus 0.1 g/day
Plasma calcium 7.0 mg/dL	Plasma phosphorus 5.0 mg/dL

Calcium and vitamin D were given orally each day and the tetany and laryngeal spasms were alleviated.

- a. What endocrine disorder does Mary Francis have?
- b. What caused the tetany and laryngeal spasms?
- c. What is the purpose of the vitamin D administration with the calcium?