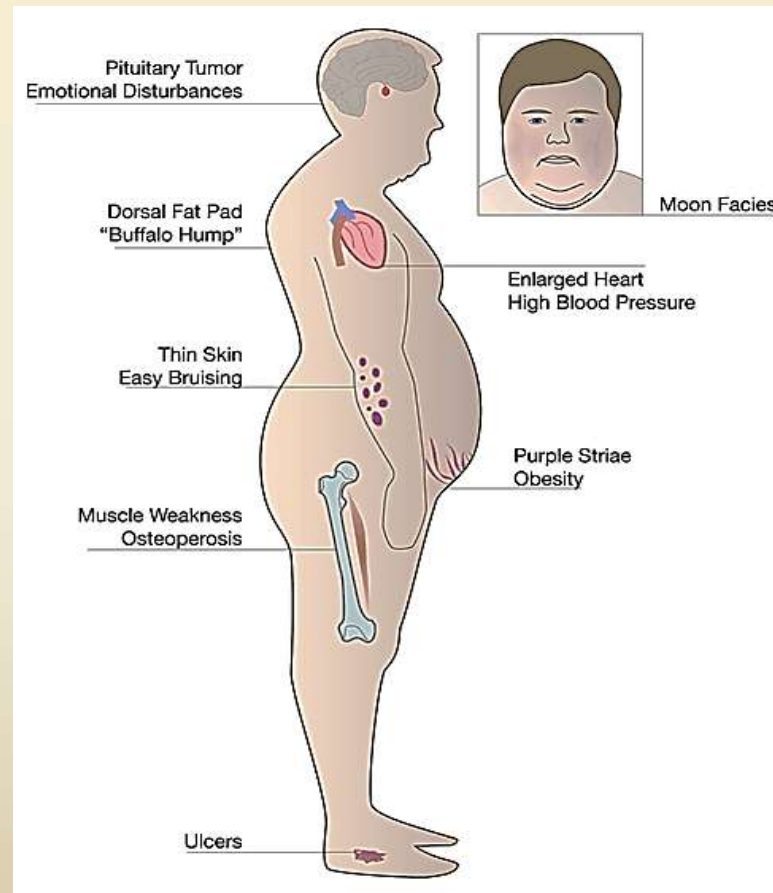
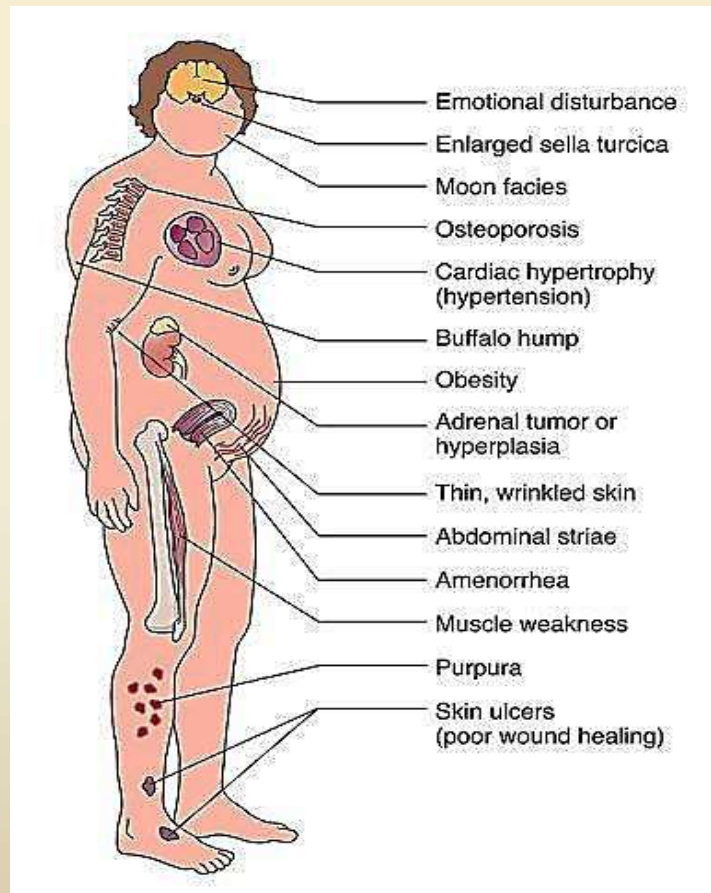


Cushing's Syndrome

Chronically high levels of glucocorticoids can result in obesity, muscle weakness, and depression, a combination of symptoms called Cushing's syndrome.



Excessive activity of which endocrine gland(s) could result in Cushing's syndrome?

- A. Adrenal gland
- B. Anterior pituitary gland
- C. Posterior pituitary gland
- D. Hypothalamus
- E. Either A or B
- F. Either A or C

To determine which gland has abnormal activity in a particular patient with Cushing's syndrome, physicians use the drug dexamethasone (a synthetic glucocorticoid). The release of which tropic hormone is affected by the administration of this drug?

- A. Corticotropin-releasing hormone
- B. Adrenocorticotrophic hormone
- C. Glucocorticoid
- D. All of the above

What is the effect of dexamethasone administration on this tropic hormone?

- A. Increase in tropic hormone release
- B. Decrease in tropic hormone release
- C. Increased tropic hormone activity
- D. Decreased tropic hormone activity
- E. None of the above

In a patient affected by Cushing's syndrome, dexamethasone was administered and the levels of blood cortisol were measured in triplicates. The following results were obtained.

Individuals	Cortisol in blood ($\mu\text{g/dL}$)	
	No drug administered	Dexamethasone administered
Normal individual	20.00 \pm 2.11	4.03 \pm 0.85
Patient affected by Cushing's disease	34.26 \pm 2.36	30.74 \pm 3.41

Draw a graph that compares the levels of cortisol in both individuals. Label your graph appropriately.

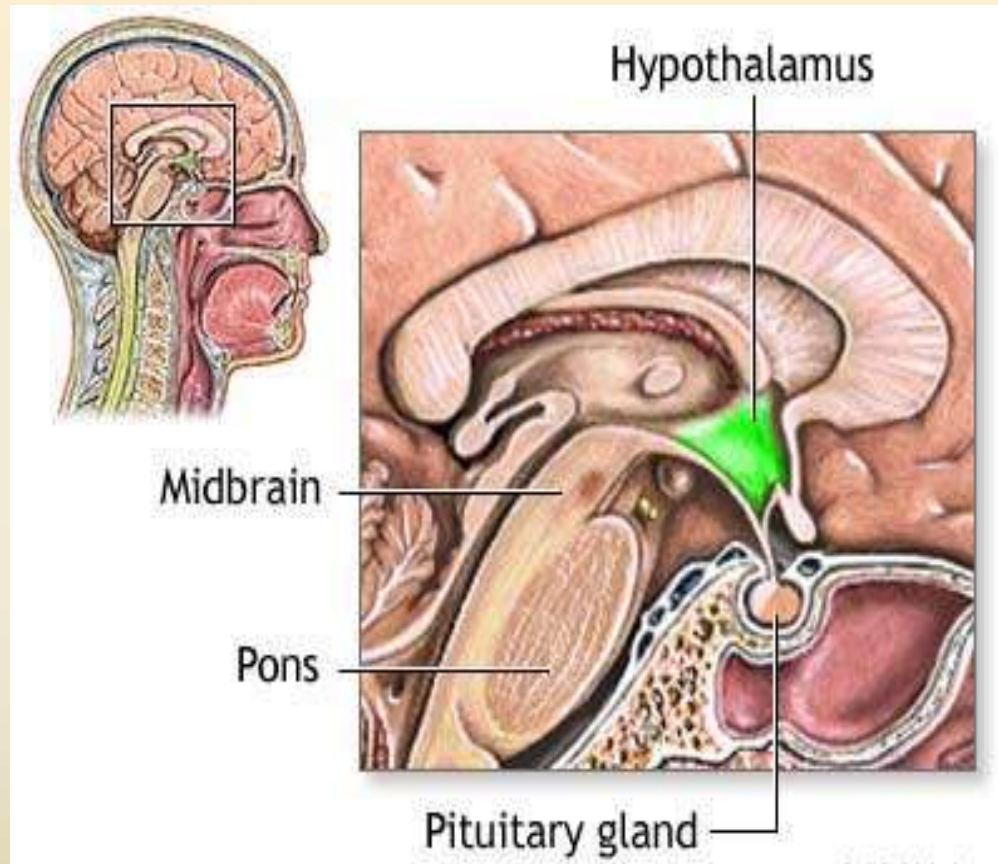
Which statistical test would you perform in order to determine whether the difference in blood cortisol levels in the patient with Cushing's syndrome is significant?

- A. Paired t-test
- B. Unpaired t-test
- C. Chi-square test
- D. ANOVA test

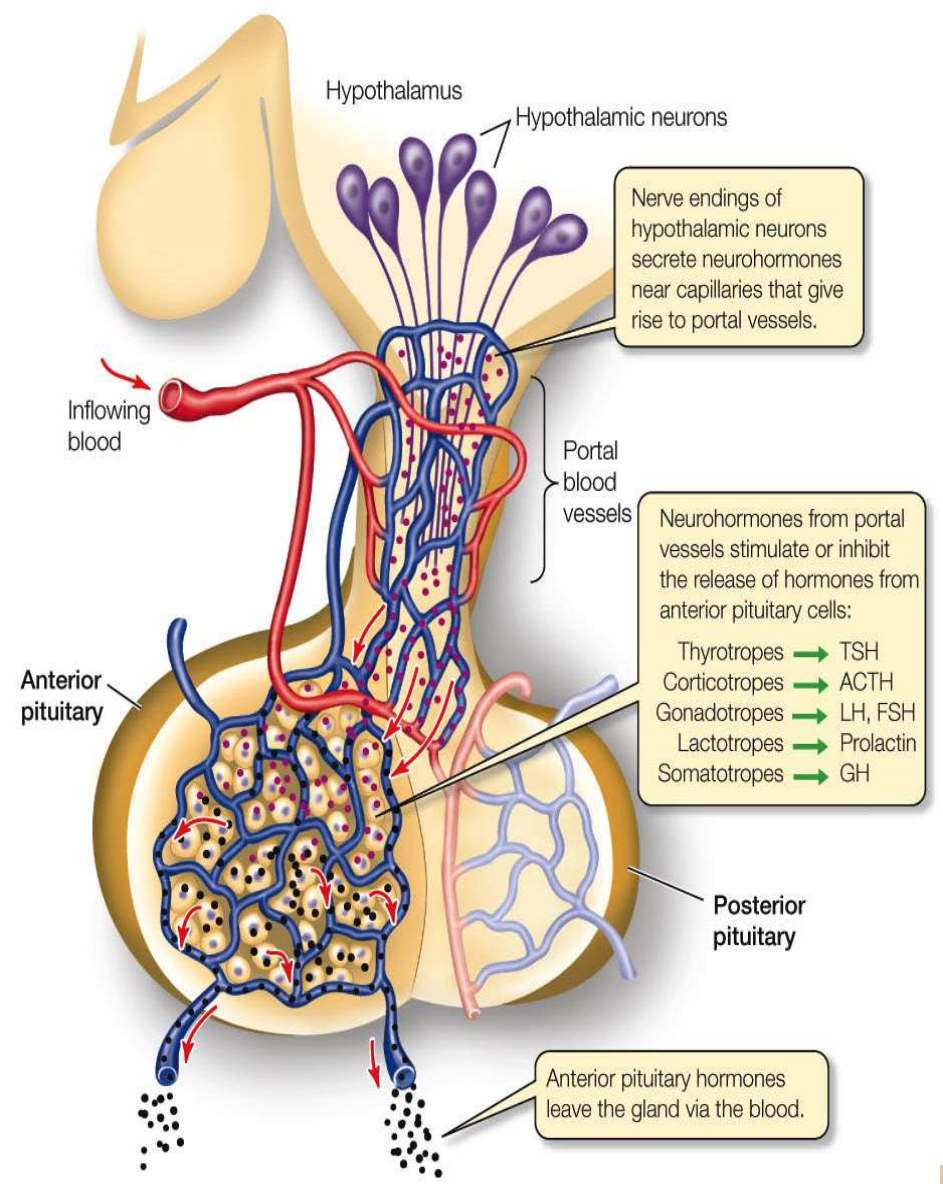
Based on the cortisol levels obtained above, which of the following is a possible cause of Cushing's syndrome in this patient?

- A. Cancer in the anterior pituitary
- B. Cancer in the adrenal cortex
- C. Cancer in the hypothalamus
- D. Cancer in the posterior pituitary
- E. None of the above

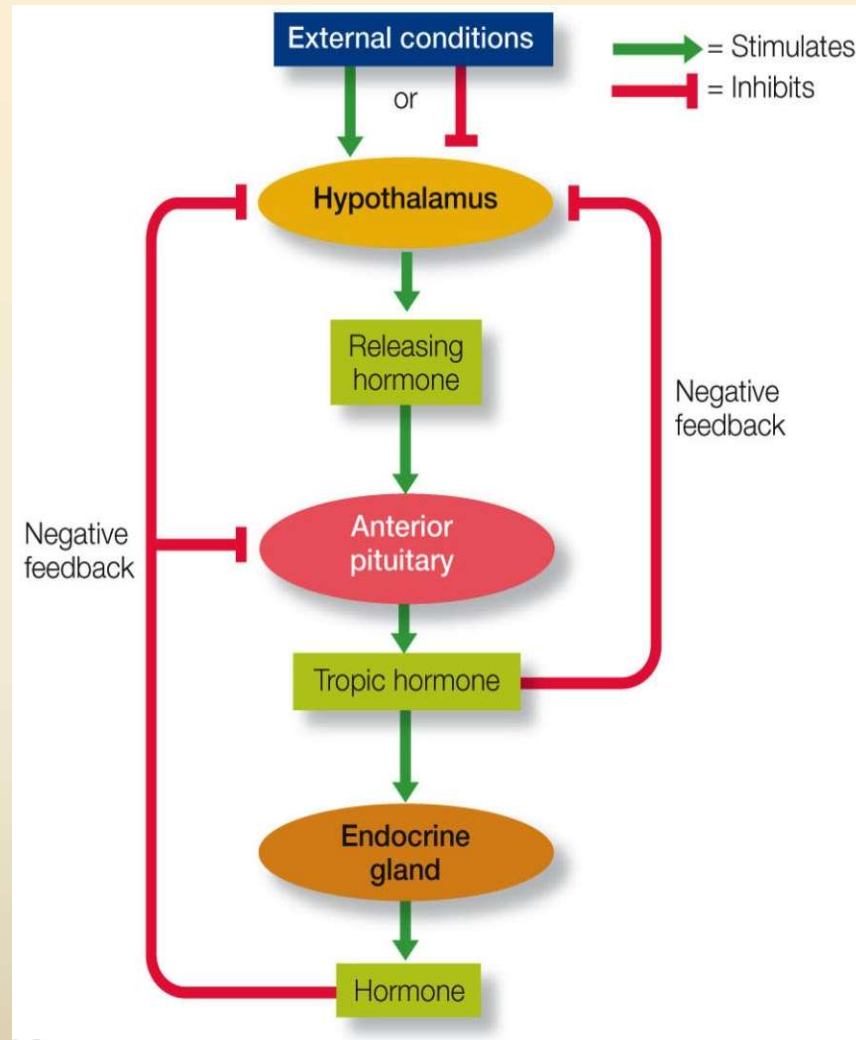
Regulation of hormone production



Pituitary gland



Control of Hormone Secretion



Regulating glucocorticoids production

