

**1. What is the likely diagnosis?**

**Secondary hypothyroidism or tertiary hypothyroidism (less likely).**

**There are certain features that are very suggestive for hypothyroidism such as:**

- **a deep voice**
- **Delayed Achilles' tendon reflex time**
- **Bradycardia**

**2. What are the symptoms that made you consider that diagnosis?**

- **Obesity**
- **Constipation**
- **Mental retardation**
- **Cold intolerant**
- **deepening of the voice**

**3. What physical findings supported the diagnosis?**

**4. Which lab data supported the diagnosis?**

- **TSH**
- **Serum T3/T4**
- **Serum cholesterol**

**Explain-Hypothalamic-Pituitary-Thyroid axis and interrelationship.**

**5. What are the most likely causes?**

- **Pituitary tumor**
- **Pituitary infarction**
- **Sarcoidosis,**
- **Histiocytosis X,**
- **Hemochromatosis,**
- **Metastatic carcinoma involving pituitary, hypothalamus or stalk,**
- **Rathke's cleft cyst, craniopharyngioma, carotid artery aneurysm compressing pituitary, infundibuloma, hypothalamic tumor (germinoma, meningioma, hamartoma)**

**6. What additional aspects of the history and physical examination could provide relevant information to help in the diagnosis?**

- **secondary adrenal insufficiency to confirm the disorder is involving the pituitary**
- **the presence of galactorrhea is non-specific because it may be present in primary hypothyroidism because of increased TRH or secondary hypothyroidism because of interruption of PIF**
- **the presence of hypogonadism is non-specific because it may be primary in a 50 year old woman or secondary**
- **a space-occupying mass such as headache, bitemporal hemianopsia, 3rd, 4th, or 6th nerve defects, seizures, rhinorrhea, meningitis**
- **history of shock or massive hemorrhage at time of delivery as well as inability to breast feed and amenorrhea afterwards**
- **symptoms of systemic illness**
- **symptoms of hypothalamic disease such as diabetes insipidus, narcolepsy, excessive appetite or marked anorexia, hyperthermia or marked hypothermia.**

**7. What additional tests would help confirm the diagnosis?**

- **MRI with gadolinium enhancement to document the presence of a mass**
- **Baseline and dynamic anterior pituitary hormone testing for deficiencies and overproduction**
- **Testing for other tumor markers (alpha subunits)**

**8. What are some of the cardiac risk factors that are present in this patient?**

- **Moderate obesity**
- **Hypertension**
- **Hypercholesterolemia**

**9. What are the treatment options?**

- **Evaluate if secondary hypoadrenalism is present.**
- **If present treat simultaneously with the treatment of the hypothyroidism.**
- **Then treat the cause of the secondary hypothyroidism.**
- **Also evaluate whether hypogonadism and/or growth hormone deficiency is present and treat accordingly.**