Laboratory evaluation of the disorders of the hypothalamus and the pituitary gland

1. A 45-year-old man seeks evaluation for weakness, fatigue, decrease of libido and loss of body weight. Laboratory tests reveal low plasma levels of ACTH and TSH. What is the most likely diagnosis and which laboratory tests would be the most appropriate for the patient?

2. In a 29-year-old woman complaining of amenorrhea, plasma PL is found elevated in association with low FSH and LH levels. Estrogen excretion is decreased. GnRH stimulation test was performed on three consecutive days. The first two tests were negative but after the third test a normal response was detected in plasma FSH and LH. How do you interpret the result of the test and what is the most likely diagnosis?

3. A 44-year-old man complains of impotence and galactorrhea. He has gynecomasty. Plasma PL is very high, FSH and LH are lower than normal. Plasma testosterone and urinary 17-ketosteroid excretion are decreased. After TRH or chlorpromazine stimulation there is only a minimal increase in plasma PL. What is the most likely diagnosis and what other tests would you perform?

4. A 51-year-old man seeks evaluation for blurring of vision and headache. He has coarse facial features and enlarged extremities. The determination of which hormone would be the most straightforward in the patient? What other diagnostic procedure(s) would you order?

5. In a 35-year-old woman, after the third delivery, lactation fails to start. She complains of loss of body weight and amenorrhea. Low voltage is found in her EKG tracing. Plasma levels of anterior pituitary hormones are very low. FT_4 and FT_3 are low. After TRH stimulation test neither TSH nor PL increase. Serum cholesterol level: 8.6 mmol/l. Is the problem primary, secondary or tertiary?

6. A 37-year-old man complains of intense thirst (anadipsia) which commenced 7 days before. He drinks 5–6 l water a day, preferentially chilled water. His urine output is 6 l/24 h, the density is 1.004 kg/l. He is subjected to a water deprivation test with a duration of 8 h. During the test period he voids 4 l urine and the density does not exceed 1.005 in any of the collected fractions. What is the most likely diagnosis and which test would be the most effective in the differential diagnosis?

7. A 50-year-old woman complains of polyuria. She drinks 6–8 l water a day. Serum Na^+: 138 mmol/l, urine output: 8 l/24 h, density: 1.004 kg/l. After salt loading urine volume decreases and the density increases. What is the most likely diagnosis?