NEURO-ENDOCRINE TUMOR CENTER

AT SAINT JOHN'S HEALTH CENTER

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HYPOPITUITARISM (PITUITARY FAILURE)

Hypopituitarism is a term that refers to under-function of the pituitary gland. This clinical term means that one or more functions of the pituitary gland are deficient. The term refers to both anterior and posterior pituitary gland dysfunction. Hypopituitarism may be temporary or permanent. Panhypopituitarism refers to complete loss of all pituitary function. Patients with panhypopituitarism should carry a Medic Alert Bracelet with them to notify health care personnel of this problem in case of an emergency.

Causes of Hypopituitarism

Loss of pituitary function can result from damage to the pituitary gland, the pituitary stalk or the hypothalamus. The hypothalamus contains releasing and inhibitory hormones that control the pituitary and reach the gland via the pituitary stalk. Injury to the pituitary gland, pituitary stalk or hypothalamus can occur from an enlarging pituitary tumor or brain tumor, pituitary or brain tumor surgery, radiation to the pituitary, pituitary apoplexy (hemorrhage), pituitary inflammation (hypophysitis) and head injury. There appears to be a predictable loss of hormonal function: the growth hormone (GH), lutenizing hormone (LH) and follicle-stimulating hormone (FSH) secreting cells appear to be the most vulnerable while thyroid stimulating (TSH) and adrenocorticotropic hormone (ACTH) secreting cells are less vulnerable. Approximately 50% of patients will have some recovery of pituitary function after surgical removal of a pituitary adenoma. Approximately 45% will have no recovery or change, and 5% will have diminished pituitary function.

Deficiency of ACTH and cortisol: Adrenocorticotropic hormone deficiency resulting in decreased cortisol production by the adrenal glands can be serious and life- threatening. With gradual onset of deficiency over days or weeks, symptoms may include weight loss, fatigue, weakness, depression, apathy, nausea, vomiting and loss of appetite. As ACTH deficiency becomes more severe or has a more rapid onset, (Addisonian crisis) symptoms may include confusion, stupor, psychosis, serum electrolyte changes (low serum sodium and/or elevated serum potassium), vascular collapse, shock and death. Treatment consists of glucocorticoid administration (hydrocortisone, dexamethasone or prednisone). For patients with acute adrenal insufficiency (Addisonian crisis), rapid intravenous administration of high dose steroids is essential to reverse the crisis.

Deficiency of TSH and thyroid hormone: Thyroid stimulating hormone deficiency causes decreased energy, increased need to sleep, cold intolerance, dry skin, constipation, muscle aches and decreased mental capacity. This is a very serious and disabling hormonal deficiency that often causes patients with pituitary disease to seek medical attention. Treatment with thyroxin (Synthroid) reverses the symptoms and signs over several days or weeks and requires careful monitoring of free T4 or total T4 (thyroid function levels).

Deficiency of LH and FSH (Hypogonadotropic Hypogonadism): Women with hypogonadism (sexual dysfunction, loss of libido, and/or impotence) develop ovarian suppression with menstrual irregularities or absence of periods (amenorrhea), infertility, decreased libido, decreased vaginal secretions and osteoporosis. Blood levels of estradiol decrease and can be replaced as oral Premarin or estrace, or given as a patch applied twice weekly. Women on estrogen also need progesterone. Men with hypogonadism develop decreased libido, impotence, decreased ejaculate volume, loss of body and facial hair, weakness, fatigue and often anemia. Blood testosterone levels are low and should be replaced as a daily patch or gel or as an injection every 2-3 weeks.

Growth Hormone Deficiency: Growth hormone is necessary in children for growth, and in adults to maintain body composition, muscle mass, energy level, cardiovascular status and possibly some mental functions. Symptoms of GH deficiency in adults include fatigue, poor exercise tolerance, decreased muscle mass, increased fat mass and poor quality life. GH is only available in injectable form that must be given daily.

Antidiuretic Hormone Deficiency (ADH) and Diabetes Insipidus (DI): Patients with DI have excessive thirst and urination. This lack of ADH results in copious and diluted (unconcentrated) urine. Such patients can become rapidly dehydrated unless they are adequately hydrated or the ADH is replaced. Diabetes insipidus results from damage to the pituitary stalk, posterior pituitary gland or hypothalamus. It may occur transiently in up to 25% of patients after transsphenoidal (through the nasal passage) pituitary adenoma surgery and is permanent in 1-3% of patients. It occurs more commonly because of a craniopharyngioma or after surgery for a craniopharyngioma which often arises along the pituitary stalk. Replacement of ADH resolves the high urine output of DI. Treatment with DDAVP (a synthetic type of ADH) can be given by subcutaneous injection, intranasal spray, or a tablet taken once or twice a day.