

Special Report: The Endocrine Society Symposium on Endocrinology of Neuropsychiatric Disorders—June 25-27, 1986, Anaheim, California

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The symposium dealt primarily with the interrelationship of nutrition, neuropsychiatric disorders, and endocrinology. Dr. John E. Morley of the University of California at Los Angeles pointed out that many peptide hormones are involved in the control of human eating behavior. For example, cholecystokinin-8 has been called a satiety factor because of its ability to decrease feeding and delay gastric emptying through vagal activity. Dr. Morley also noted that glucagons, somatostatin, bombesin, calcitonin, naloxone, and other opioid antagonists act centrally as satiety factors. Corticotropin-releasing factor is also a potent anorectic agent. Peptides that enhance feeding behavior include the endogenous opioids, pancreatic polypeptide, galinin, growth-hormone-releasing hormone, and neuropeptide Y (bulmin).

Dr. Michelle P. Warren of St. Luke's-Roosevelt Hospital, New York City, discussed endocrine changes associated with anorexia nervosa. Dr. Warren stated that the incidence of anorexia nervosa appears to be increasing. It afflicts between 0.5% and 1.0% of white adolescents who are in the mid-socioeconomic group. There is a 6% concordance in incidence among monozygotic twins although the reasons for this are poorly understood. The peak age of onset is at about 12 to 13 years of age. For some unexplained reason, anorexia occurs more often in girls with scoliosis. The disorder is very rare among blacks and among men (the male-female ratio is 1:9). However, anorexia nervosa occurs in males who are training for competitive athletic activities and are restricting their food intake. Between 5% and 20% of professional ballet dancers can be

classified as patients with anorexia nervosa.

The endocrine changes seen in anorexia nervosa appear to be adaptive phenomena and are similar to those seen in starvation. These include lower levels of luteinizing hormone (LH) and follicle-stimulating hormone (FSH) and decreased pulsatility of LH over a 24-hour period. The pulsatility pattern reverts to that seen in prepubertal subjects. There is also increased secretion of endogenous opioids, but administration of naloxone restores normal LH secretion in only a small number of patients. Thyroid function resembles that in the "euthyroid sick syndrome," with increased 3,3',5' triiodothyronine concentrations and decreased 3, 5, 3' triiodothyronine secretion. This reduces the metabolic rate and decreases muscle catabolism. Hypercortisolism often occurs because of

decreased clearance of free cortisol, and it is presumed that there is increased secretion of corticotropin-releasing factor (CRF). Growth hormone is increased, but somatomedin-C (IGF-I) levels are decreased; this may conserve nitrogen. There is increased sensitivity to insulin, and norepinephrine secretion is reduced. Vasopressin also appears to be reduced and this may cause difficulty in handling water loads.

Consequences of the amenorrhea induced by starvation may be osteoporosis, stress fractures, and aseptic hip necrosis. All of these conditions are much more common in patients with anorexia than in normal females. Osteoporosis may result from scoliosis, but scoliosis may actually precede anorexia, an interesting observation.

Dr. George F. Koob of the Scripps Clinic and Research Foundation in La Jolla, California,

discussed behavioral and endocrine effects of CRF on the central nervous system (CNS). CRF is a potent stimulus for both adrenocorticotrophic hormone (ACTH) and beta-endorphin release. It has also been shown to increase CNS activity in a manner much like that of caffeine, and it potentiates the acoustic startle response. CRF also affects the limbic system, with its primary effects on learning and behavioral pathology, aggression, and changes in sexual behavior.

Another presentation at the symposium dealt with the pathophysiology of hypothalamic-pituitary-adrenal dysfunction in depression and anorexia nervosa. Dr. Philip W. Gold of the National Institute of Mental Health of the National Institutes of Health in Bethesda, Maryland, reported that hypothalamic dysfunction has been shown to be present in anorexia nervosa and depression.

Moreover, the hypercortisolism present in both disorders appears similar in pathophysiology, but different from that observed in Cushing's disease. Dr. Gold stated that in both depression and anorexia nervosa, there is probable increased secretion of endogenous CRF, attenuated ACTH responses to CRF, and adrenal hyperresponsiveness to ACTH. These abnormalities resolve when the patients gain weight. The hypercortisolism in depression and anorexia nervosa represents a central defect, whereas the hypercortisolism of Cushing's disease is believed to be caused by a defect of excessive ACTH secretion that seems to be localized in the pituitary. Dr. Gold and his co-workers believe that endogenous CRF secretion in patients with depression and anorexia nervosa may be significant in the symptom complexes of these illnesses.