

The Rapid Ovarian Secretory Response to Pituitary Stimulation by the Gonadotropin-Releasing Hormone Agonist, Nafarelin, in Sexual Precocity

Serum luteinizing hormone (LH) and follicle-stimulating hormone (FSH) concentrations reach similar maximal concentrations following a three- to four-hour high-dose infusion of gonadotropin-releasing hormone (GnRH) itself or a single maximally effective dose of a GnRH agonist. However, circulating estradiol levels in adult women usually increase within 12 to 24 hours only after the agonist injection.

The present investigation was undertaken to determine the steroidogenic response both to nafarelin, a long-acting GnRH agonist, and to an intensive standard GnRH test.

Thirteen girls with central precocious puberty were studied. GnRH was infused intravenously at a rate of 2 $\mu\text{g}/\text{kg}/\text{hour}$ for 3 hours. Nafarelin was given as a single subcutaneous injection in a dose of 0.2 $\mu\text{g}/\text{kg}$. The serum LH and FSH concentrations were elevated by both GnRH infusion and nafarelin administration to reach a plateau at 3 hours. The initial rises were significantly more rapid with the GnRH analog, but only after nafarelin injection did serum LH and FSH remain significantly elevated. Plasma estradiol levels increased slightly after 3 hours with both agents, but rose 3.6-fold 24 hours after nafarelin administration.

Rosenfeld RL, Garibaldi LR, Moss GW Jr et al. *J Clin Endocrinol Metab* 1986;63:1386-1389.

Editor's comment—A single injection of the GnRH agonist, nafarelin, sequentially stimulates pituitary and ovarian secretion in

girls with precocious puberty just as early and promptly as in adult women. The pattern of steroid secretion in response to nafarelin is typical of normal ovarian follicular secretion. The ability of nafarelin to test the integrity of ovarian, as well as pituitary, function makes this compound appear useful for clinical testing.

The gonadotropin and gonadal steroid profiles noted suggest that this compound may be useful in the treatment of precocious puberty and hormonally dependent neoplasms by long-term receptor desensitization (down regulation) of the gonadotropes.

Organ Procurement for Transplantation in Children

The number of organ transplants in children with fatal childhood diseases is increasing. Many of these disorders are either genetic or have a genetic component in their etiology. In the United States, it is estimated that there are 300 to 500 children with end-stage renal disease who could discontinue dialysis if kidneys for transplantation were available. For an additional 400 to 800 children with liver failure and 400 to 600 children with severe forms of congenital heart disease, organ transplantation is their only hope for survival. These figures do not take into account those children with inborn errors of metabolism who could also benefit from organ transplants. While the technology of transplantation has improved dramatically over the last few years, a source of tissue for organ transplantation has become a major problem. Two recent articles have addressed this problem and the ethical issues involved.

Organs from anencephalic fetuses or infants have become a potential source for transplantation. Although anencephaly is a

hopeless defect of the central nervous system, the other vital organs of anencephalic infants are usually normal. It appears that fetal organs, although somewhat immature, may yield excellent results if they are transplanted, because of their ability to grow and their almost total lack of antigenicity, which makes them less likely to be rejected. However, the ethical questions involved in declaring "personhood" and death in an anencephalic infant or fetus creates some very difficult issues. First, the anencephalic fetus, for legal purposes, must be considered brain dead. Furthermore, most anencephalics are diagnosed prenatally and, therefore, are initially considered as unborn patients. However, diagnosis in the second trimester does not preclude the use of fetal organs. The usefulness of transplanting the organs from a fetal or term anencephalic depends instead on whether the organs can be maintained in a healthy condition prior to transplantation.

By defining the ethical and legal issues involved in the transplantation of organs from anencephalic infants and fetuses, investigators are making progress in an area that may affect children with a variety of genetic disorders. Another important issue is whether the cost of organ transplantation (\$100,000 to \$200,000) for one individual represents an appropriate use of limited health resources.

1. Harrison MR. *Lancet* 1986;ii:1383-1385.
2. Moskop JC. *J Pediatr* 1987;110:175-180.

Editor's comment—The use of organ transplantation for children will be increasing over the next few years. Thus, it is important to be aware that anencephalics may serve as one of the important sources of healthy tissue for transplantation.