OBJECTIVES

The purpose was to get the basic data of optimum serum concentration of estrogen in maximizing pubertal growth spurt, and decreasing the acceleration of epiphyseal closure of long bones.

METHODS

Subject
Fifteen female SD rats (13-week aged; post pubertal growth spurt) were randomly divided into 3 groups

Three groups were randomly divided according to serum concentration of estrogen
1. Group 1 as a control (N=5)
   sesame oil
2. Group 2 as a low dose (N=5)
   10 ug/kg/week of estradiol depo
3. Group 3 as a high dose (N=5)
   100 ug/kg/week of estradiol depo

For 8 weeks (week 13 - 20)
Subcutaneous injection on posterior neck area

Experiment
1. Anthropometric check
   Crown-rump length, body weight check weekly
2. Laboratory check
   Growth hormone, Estradiol using ELISA
3. Dissection of proximal tibia
   HE staining
   Thickness of epiphyseal plate including proliferative zone and hypertrophic zone were checked (20 equally divided site)

RESULTS

Both low and high dose estrogen could increase the secretion of growth hormone.

There is a tendency that epiphyseal plate thickness is negative relations with estrogen dosage, but larger sample studies are needed.

The effects of estrogen on epiphyseal plate in rodents may be different with human, therefore this kind of studies in animal models other than rodents are necessary.