THE EFFECT OF OVARIAN STEROIDS ON GLUCOSE, INSULIN, AND GROWTH HORMONE

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As the popularity of the oral method for fertility control increased, so did the recognition of potentially serious complications. One area which has been extensively investigated is the effect of these medications on carbohydrate metabolism. Our investigations involve five areas of study:

1) prospective studies of blood glucose and insulin levels in women using several types of oral contraceptives;

2) cross-sectional studies of blood glucose and insulin levels in women using several types of oral contraceptives;

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levels in women who have used various types of oral contraceptives for prolonged periods of time;

3) investigations of the individual components (estrogens and progestins) of the oral contraceptive drugs;

4) studies of the characteristics of women developing the most marked alterations in order to determine a profile for the high risk group;

5) studies of human growth hormone (HGH) levels in women using oral contraceptives thus seeking to determine a mechanism involved in these alterations.

These studies are all still in progress. It is the purpose of this report to review the status of these five areas of study.

METHODOLOGY

The subjects tested were all volunteers and were not selected for any characteristic. In order to have control conditions prior to beginning these studies the subjects had to be at least six weeks postpartum or three months without steroid hormone usage. All subjects were instructed to eat a high carbohydrate (300 gram) diet for at least three days prior to testing. They were all brought into the laboratory between 0700 and 0900 after fasting overnight so as to control any circadian rhythms in hormone secretion. Prior to any test, a detailed history was obtained and height and weight were recorded. During the testing procedure physical activity was restricted to sitting for the insulin tests or lying for the HGH tests.

A. Tests

1. Intravenous Glucose Tolerance Test. In this test, a fasting venous blood sample was drawn and the subject was given an intravenous injection of twenty-five grams of glucose as a 50% solution over a two minute period. Repeat blood samples were then drawn at 0.25, 0.5, 1 and 2 hours after the injection.

2. Oral Glucose Tolerance Test. After a venous blood sample was drawn, the subjects were asked to drink a solution containing 100 grams of glucose. Repeat blood samples were drawn at 0.5, 1, 2, and 3 hours.

3. Growth Hormone (HGH) Hypoglycemic Test. The subjects for this test were placed at complete bed rest and a venous catheter was placed in the antecubital fossa to limit the stress of the test