SHORT COMMUNICATION

INFLUENCE OF NANDROLONE (DURABOLIN) ON THE RESPONSE OF SERUM GROWTH HORMONE LEVELS TO INSULIN HYPOGLYCEMIA IN FEMALES

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Summary: Serum growth hormone levels were measured in 12 young healthy females at a fixed post menstrual period. Intravenous insulin 0.1 U/kg was used as a challenge and the study was repeated after intramuscular injections of nandrolone phenyl propionate, an anabolic steroid. There was no change in growth hormone response to insulin hypoglycaemia after treatment with the anabolic steroid.

Key Words: *anabolic steroid* *nandrolone (durabolin)* *growth hormone*

INTRODUCTION

It has been reported that basal and ambulatory growth hormone levels are higher in females than in males (6). Frantz and Rabin (2) reported growth hormone levels in ambulatory males in response to arginine infusion and the levels could be enhanced by prior treatment with stilboestrol. Oestrogen binding sites have been characterised in hypothalamus and the possibility of various stimuli acting on hypothalamus and releasing the growth hormone releasing factor has been suggested. It is possible that oestrogens sensitise these areas in the hypothalamus leading to a better release of growth hormone (3). Since one of the actions of growth hormone is nitrogen retention, it could be that lack of anabolic androgens is responsible for greater sensitivity of the female and the stilboestrol treatment of the male inhibits androgen secretion and thus enhances growth hormone output.

This study was planned to investigate the effect of nandrolone phenyl propionate (Durabolin) on growth hormone release in females subjects.

MATERIALS AND METHODS

The subjects of the study comprised 12 healthy female volunteers between 19—25 years of age. Each individual had normal periods of menstruation. Their heights ranged between 146—153 cms (mean value 153 cms), and weights between 49-58 *kg* (mean value 53 *kg*).

Serum growth hormone estimations were done by the radio-immuno assay as described by Roth *et al* (4).

Each volunteer was admitted into hospital early in the morning in a fasting state and after a stabilization period of 2 hr, 10 *ml* of venous blood was removed and through the same vein, insulin (0.1 U/Kg) was injected. Subsequently 5 *ml* of venous blood samples were collected, 30, 60 and 90 min after the insulin injection. The serum of all samples was separated immediately after withdrawal and kept frozen till the time of assay. These levels were initially estimated on the 12th day of the menstrual cycle. Following this, 25 *mg* of Durabolin was administered intramuscularly each time on the 9th and 11th day of the next menstrual cycle. Growth hormone levels in response to insulin injection were determined again on the 12th day of the cycle.

RESULTS

The results are summarized in Table I.

TABLE I: *Lack of effectiveness of nandrolone treatment on growth hormone responsivity to insulin: Mean hormonal levels ± S.D. in mμg/ml are presented at* 30, 60 *and* 90 *min after insulin injection* (0.1 *U/kg*).

	30 *min*	60 *min*	90 *min*
Control	7.1 ± 1.9	12.2 ± 3.6	10.7 ± 2.9
After nandrolone treatment	7.2 ± 2.1	12.4 ± 3.7	9.3 ± 2.4
P value	>0.05	>0.05	>0.05

DISCUSSION

The results of the present study show that the short term administration of Durabolin which is a potent anabolic steroid does not alter the response of human females to insulin hypoglycaemia. Durabolin was administered in doses of 25 *mg* and the first administration was 3 days before the test. This should give peak anabolic effect at the time of the test. Besides, it may be noted that all volunteers were tested for their serum growth hormone levels on the 12th day when sufficient oestrogens are expected to be circulating thus allowing interaction between the oestogens and the androgens. The possibility that the androgens which are potent anabolic substances, might blunt the process of release of growth hormone as the growth hormone releasing mechanism may be connected in some manner with nitrogen metabolism seems, as per our studies, to be remote. It has been mentioned that the effect of stilboestrol administration on growth hormone may be due to inhibition of androgens (5). In the light of our observations, this does not sound plausible.

Since Durabolin did not affect the growth hormone response to insulin injection it can be concluded that anabolic status or the anabolic action of androgens does not affect the circulating levels of growth hormone. It appears, therefore, that the oesrogen induced increase

in growth hormone release may possibly be due to its effects on the hypothalamic neurones, and not due to its interaction peripherally with the androgens.

It may be relevent here to mention that Danoski *et al* (1) obtained reduced growth hormone release after prolonged treatment with Oxendrolone - an anabolic steroid, in growth retarded children. It is difficult to interpret their results in the light of observations made in our experiments which were essentially planned to assess the short-term regulatory effect of sex hormones on the growth hormone release.

ACKNOWLEDGEMENT

Pure human growth hormone prepared for the National Pituitary Agency and antiserum prepared by Dr. S.A. Benson were a gift from Professor A.E. Wilhemi (Department of Biochemistry, Emory University, Atlanta, Georgia, U.S.A.) to whom we are highly obliged.

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