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The Effects of Estradiol on Serum Levels of Triglyceride and Cholesterole in Rat

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***Abstract*:** *Sex steroids play multiple roles in the regulation of metabolism and physiological systems in the body. Muscle , liver and adipose tissue are targets of sex steroid hormones. The aim of this study was to evaluate the effect of orchidectomy and testosterone replacement therapy on lipid profiles. In this experimental study, male rats were divided into control, olive oil receiving, orchidectomized, orchidectomized estradiol receiving groups. Estradiol (10 mg\kg) was injected daily. After 7 weeks, blood samples were prepared and serum lipid profile was measured by spectrophotometry method. The data were analyzed using ANOVA. There was no significant differences in serum levels of triglyceride and cholesterol of sham and olive oil receiving groups compared to control group. Serum triglyceride level significantly decreased in orchidectomised, estradiol receving and orchidectomised estradiol receiving rats (P<0.05); however, there was no significant difference in serum triglyceride levels between estradiol receving or orchidectomised estradiol receiving groups and orchidectomised group. Serum cholesterol level significantly decreased in orchidectomised and orchidectomised estradiol receiving groups compared with control animals (P<0.05); however, did not significantly change in estradiol receiving group compared to control group. There was no also significant difference in cholesterol level between orchidectomised group and estradiolorchidectomised estradiol receiving group. The findings show that estradiol has not significant effects on serum levels of cholesterol or triglyceride in the male*

Keywords: *Orcidectomy, Etsrdaiol, Cholesterol, Triglyceride*

1. Introduction

Lipid profile or lipid panel is a panel of blood tests that serves as an initial broad medical screening tool for abnormalities in lipids, such as cholesterol (CHOL) and triglycerides (TG) [1]-[3]. Abnormal changes of lipid profile can be as risk factors for cardiovascular disease [4],[5]. Testosterone is a steroid hormone and the most potent naturally occurring androgen that is formed by the interstitial cells of the testes, and possibly by the ovary and adrenal cortex, may be produced in nonglandular tissues from precursors such as androstenedione, and is used in the treatment of hypogonadism, cryptorchism, carcinomas, and menorrhagia [6]. Also changes in serum level of this hormone can have effects on biochemical factors such as lipid profile[7],[8]. The use of testosterone to enhance physical abilities may be the highest damage to organs such as heart, kidney, brain, liver, and muscle. The aim of this study was to evaluate the effect of orchidectomy and testosterone replacement therapy on lipid profiles.

2. Material And Methods

In this experimental study , male rats were andomly divided to control, estradiol receiving, orchidectomised and orchidectomised estradiol receiving, olive oil receiving and sham groups. Estradiol (10 mg\kg) was injected

daily. After 7 weeks, blood samples were prepared and lipid profile was assayed. Data were analyzed using ANOVA.

3. Results

There was no significant differences in serum levels of triglyceride and cholesterol of sham and olive oil receiving groups compared to control group.

Serum triglyceride level significantly decreased in orchidectomised, estradiol receving and orchidectomised estradiol receiving rats ($P<0.05$); however, there was no significant difference in serum triglyceride levels between estradiol receving or orchidectomised estradiol receiving groups and orchidectomised group (Figure I).

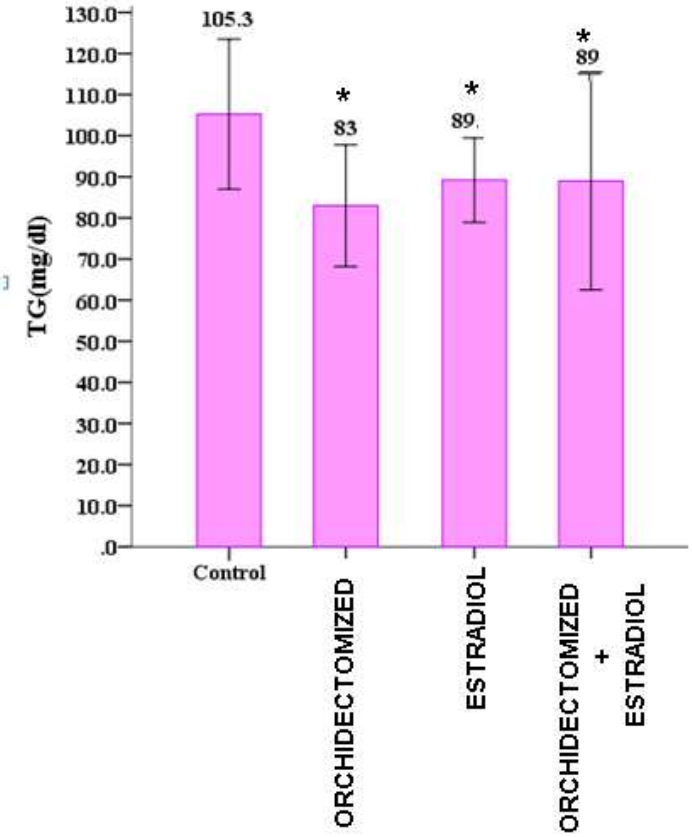

Fig. I. Serum TG levels in control, orchidectomised, estradiol receiving and orchidectomised estradiol receiving groups.

Serum cholesterol level significantly decreased in orchidectomised and orchidectomised estradiol receiving groups compared with control animals ($P<0.05$); however, did not significantly change in estradiol receiving group compared to control group. There was no also significant difference in cholesterol level between orchidectomised group and estradiolorchidectomised estradiol receiving group (Figure II).

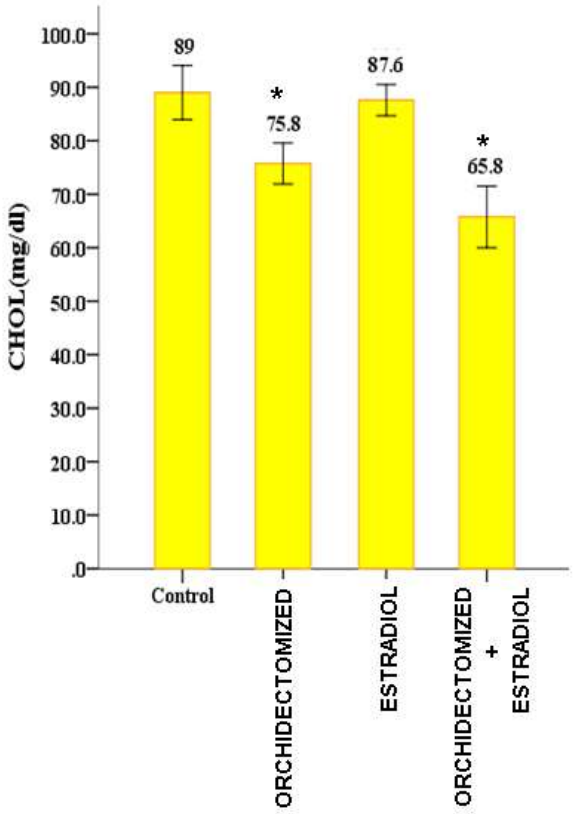

Fig. II. Serum CHOL levels in control, orchidectomised, estradiol receiving and orchidectomised estradiol receiving groups.

4. Discussion

The disorders related to lipid profile have high prevalence and the costs of this disorders are extensive[5]-[8]. The results of our study show that unlike testosterone, estradiol does not play a significant role in regulating of serum cholesterol or triglyceride level in the male .

However, estradiol and testosterone with stimulatory effects on endocrine system have capability to change lipid profile [9]-[14], but it seems that estradiol has subsidiary role in this aspect compared to testosterone.

5. Conclusion

The findings show that estradiol has not significant effects on serum levels of cholesterol or triglyceride in the male.

6. Acknowledgements

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7. References

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