Original Research Article

Comparison of intra ocular pressure changes in third trimester of normal pregnancy and pregnancy induced hypertension

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Abstract

12-17% pregnant women face various problems related to pregnancy and child birth. The alarming symptoms of eye with Pregnancy Induced Hypertension are blurring, dimness of vision and at times complete blindness. 60 pregnant women with third trimester of normal pregnancy and PIH were selected for the study. There was a significant increase in third trimester IOP in PIH women when compared to normal pregnant women. Along with routine Blood Pressure monitoring and antenatal check up Intra Ocular Pressure measurement by Schiotz tonometry is advised to prevent the complications of PIH and ocular problems.

Key Words: Intra Ocular Pressure normal pregnancy Pregnancy Induced Hypertension Schiotz tonometry third trimester

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INTRODUCTION

During pregnancy various changes take place in the body due to hormonal effects of the placenta and the placental hormones have effects on most organ systems including the ocular system. The temporary changes in vision will return to normal after delivery. The tendency of fluid retention affects refraction of eye. There will be progressive increase in oestrogen secretion as Pulsatile Ocular Blood Flow during the different phases of pregnancy. High Blood Pressure in late pregnancy influences the known ocular hypotensiv effect[1]. Increased POBF is more significant in third trimester of pregnancy when compared to first and second trimesters of normal preganany. The fluid pressure within the eye that is normal IOP decreases steadily beginning in the first trimester to third trimester due to hormonal and circulatory changes. Systemic Blood Pressure is positively related to IOP. Normal increase in levels of progesterone, beta HCG, generalized acidosis and increased tissue elasticity leading to decreased scleral rigidity and aqueous outflow facility are the main mechanisms implicated for decrease in IOP during normal pregnancy.PIH causes conjuctival spasm, tortuosity, pupillary mydriasis, ptosis and nystagmus.

MATERIALS AND METHODS

The work was carried out at Government Maternity Hospital Hanamkonda and Government General Hospital Siddipet in the departments of Obstetrics and gynaecology and Ophthalmology. Prior to the study written consent was obtained from the pregnant women. We have selected 60 pregnant women in third trimester of normal pregnancy and PIH in the age group of 20-40 years with normal vision by excluding the previous refractive errors of the eye, hypertension and diabetes

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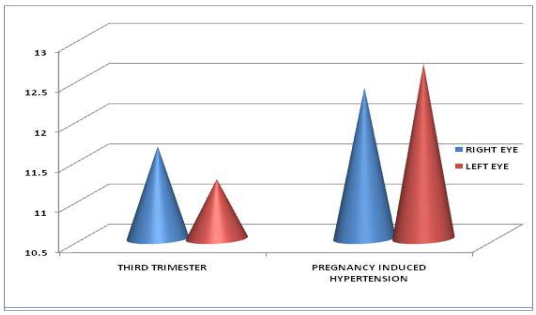
mellitus. We had explained the aim of the research protocol and the methods to be used to the pregnant women in the antenatal clinic to identify the subjects eligible for the study and willing to participate. Along with routine investigations IOP measurement was done by Schiotz tonometry. The normal IOP range is 10-21 mm Hg with average tension 16 ± 2.5 mm Hg.

OBSERVATIONS AND RESULTS

A total of 60 subjects of third trimester of normal pregnancy and PIH were selected and the data obtained was analyzed by using unpaired student's t-test for difference of means with unequal variances for statistical analysis. Mean IOP of third trimester PIH women was significantly higher from that of normal pregnant women. There was a significant increase in IOP during PIH with p-value <0.0001.

Table 1: Comparison of IOP changes in third trimester of normal pregnancy and pregnancy induced hypertension

GROUP	IOP	MEAN	SD
THIRD TRIMESTER	RIGHT EYE	11.65	0.9193
	LEFT EYE	11.24	0.8905
PIH	RIGHT EYE	12.38	1.0215
	LEFT EYE	12.68	0.587



DISCUSSION

Oestradiol increases Nitric Oxide and prostacycline activity with vasodilative action to reduce the response capacity of unstriated musculature. There will be a gradual fall of IOP during the three trimesters of normal pregnancy and it was observed that up to 8th week IOP remained the same and at 12th week it became significantly lower[2,3]. Due to increased aqueous out flow facility IOP decreases gradually even though aqueous flow remains constant during and after pregnancy. The changes in aqueous dynamics are consistent with excess progesterone which blocks the ocular hypertensive effect of endogenous corticosteroids[4].There is a correlation between Blood Pressure and IOP due to differences in total peripheral resistance which in turn influenced by tonic systemic control of resistance vessels and also by genetic factor. Glucocorticoid antagonistic properties of progesterone help in lowering of IOP. In PIH the basic pathology is endothelial dysfunction and vasospasm. Endothelial dysfunction is due to oxidative stress and vasospasm is resulting from the imbalance of vasodilators and vasoconstrictors. Very high systemic Blood Pressure causes development of hypertensive retinopathy with bleeding in retina and retinal detachment which may progress to permanent visual impairment if untreated.

CONCLUSION

Vision disturbances may occur in imminent stage of eclampsia. Sometimes sudden transient loss of vision like Amaurosis fugax may found in PIH due to sudden severe vasospasm of retinal arterioles. We conclude that along with routine antenatal investigations IOP measurement during three trimesters of pregnancy is useful to monitor and prevent the complications of PIH.

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