ORIGINAL RESEARCH PAPER

Obstetrics & Gynaecology

VISUAL ACUITY AND REFRACTIVE CHANGES IN PREGNANCY

KEY WORDS:

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ABSTRACT

Aim: The purpose of this study was to determine the changes in visual acuity in the different trimesters of pregnancy and in the immediate post-partum period. **Materials and Methods:** This was a prospective study conducted between January 2022 to December 2022 at PRG Hospital Gingee, Tamilnadu, India. A standardized data collection form was designed to collect information on socio demographic and clinical findings. Visual acuity and refractive error were monitored in the 2nd and 3rdtrimester and in immediate post-partum period (within 6 weeks after delivery). **Results:** The mean age of antenatal women was 23.9 years and majority of them were house wives. Twenty patients were included in this study. Worsening of vision for distance was more in the 3rd trimester when compared to the 2nd trimester. Increased myopic shift was prominentin the 3rd trimester (40%) compared to the 2nd trimester (35%). The most common refractive error was myopia, which spontaneously resolved in the post-partum period. **Conclusion:** Pregnancy worsened the visual acuity for distance especially in the 3rd trimester and the most common refractive error was simple myopia, which resolved in the post-partum period.

INTRODUCTION

Pregnancy can provoke alterations in the ocular system, which may arise from metabolic, hormonal and immunological changes in the body. Although the visual changes in pregnancy is not vision-threatening, it definitely has an impact on the anxiety among pregnant women. Pregnancy can affect many ocular structures including eyelid, conjunctiva, cornea,lens, retina, optic nerve and orbit[1]. Hormonal change in pregnancy may lead to increased corneal thickness and curvature, affecting the visual acuity[2,3]. Increased thickness of the lens can also cause refractive error and impaired vision[1]. Ocular changes in pregnancy can either be physiological or pathological. The physiological changes are transient and are due to the hormonal, metabolic, haemodynamic, vascular and immunological factors in pregnancy[4,5]. The pathological changes are reflective of the underlying neovascular complications, resulting in hypertensive crisis and impaired glucose metabolism[6,7]. It is essential to differentiate these changes, to individualize the appropriate management accordingly. Pregnant women, regardless of their visual health status, should undergo regular perinatal eye examination, in order to assure continuous surveillance of eyes.

MATERIALS AND METHODS:

This was a prospective study conducted from January 2022 to December 2022 at the PRG hospital, Gingee, Tamilnadu, India. Antenatal women enrolled during this period was evaluated in the 2nd and 3rd trimester and in the immediate post partum period.

Inclusion Criteria

1. Antenatal women with or without refractive errors

Exclusion Criteria

1. Antenatal women with ocular pathologies such as glaucoma, uveitis and history of previous corneal refractive surgeries
2. Antenatal women with systemic co-morbidities like diabetes and hypertension

A standardized data collection form was designed to collect information on socioeconomic and clinical findings.

Visual acuity is defined as the ability of the eye to distinguish shapes and details of objects at a given distance.

Refractive error (myopia, hypermetropia, astigmatism) is defined as an eye condition in which the shape of the eye prevents light from focusing directly at the back of the eye (at the retina). Unaided visual acuity lesser than 6/6 and improving with pinhole, were checked for refractive error.

Visual Acuity and Refraction Assessment:

Visual acuity for distance, was tested using snellen's chart and tumbling E chart held at a distance of 6 meters, for literate and illiterate patients respectively. For patients with sub-normal vision (vision lesser than 6/6), pin hole test was done.

Near vision was checked using LogMAR near acuity chart held at a distance of 30-35 cms. Each eye was checked separately for distance and near.

Refractive error was checked using manifest refraction, without using mydiatric eye drops. The best corrected visual acuity (BCVA) was recorded.

RESULTS

Most of the antenatal women included in this study were aged between 20 to 35 years. Majority of them were house wives, with primary level of education. The most frequent ocular symptoms in those antenatal women were itching and blurring of vision (Table -1)

Table -1 Distribution of antenatal women according to their socio-demographic, past ocular history and clinical symptoms

Variables	Frequency	Percentage (%)
Age (years)		
18-35 yrs	16	80
>35 yrs	4	20
Educational level		
Primary	13	65
Secondary	6	30
Tertiary	1	5
Occupation		
House wives	18	90
Labourers	2	10
Parity		
Primigravida	6	30
Multigravida	14	70
Previous history of eye check		
No	16	80
Yes	4	20

Most disturbing symptoms		
Itching	3	75
Blurring of vision	1	25
Droopy eye lids	0	0
Primary diagnosis		
Short sightedness	1	25
Do not know	3	75

In majority of the participants the visual acuity ranged between 6/6 and 6/18. The visual acuity for distance, worsened in the 2nd and the 3rd trimester (Table -2). It improved in the post partum period. There was no significant change in visual acuity for near.

Table – 2 Distribution of antenatal women according to the changes in their visual acuity levels in the 2nd and 3rd trimester

	Same	Improve	Worsen
Visual acuity for distance			
Right eye:			
2nd trimester	11	1	8
3rd trimester	11	0	9
Left eye:			
2nd trimester	12	1	7
3rd trimester	11	0	9
Visual acuity for near			
Right eye:			
2nd trimester	19	1	0
3rd trimester	18	1	1
Left eye:			
2nd trimester	19	1	0
3rd trimester	18	1	1

Table – 3 Distribution of the antenatal women according to their refractive errors

Refractive error	Right eye			Left eye		
	2nd Trimester Frequency	3rd Trimester Frequency	PP Frequency	2nd Trimester Frequency	3rd Trimester Frequency	PP Frequency
Simple hypermetropia	1	0	1	1	0	1
Simple myopia	7	8	8	7	8	8

Simple myopia was most commonly seen refractive error, followed by simple hypermetropia in this study. Increased myopic shift was noted in the antenatal women from the 2nd to 3rd trimester (Table -3)

DISCUSSION

Many women experience visual changes during pregnancy, but the awareness that pregnancy affects the eye, is very low among the majority of the participants in this study. Mean age of the participants in this study was 23.9 years.

Visual Acuity

Visual acuity for distance was decreased in antenatal women in the 3rd trimester. But there was no change in the visual acuity for near. Other studies had also reported that pregnancy affect visual acuity[8,9] and the refractive status[5]. In one of the study done by Ebeigbe et al[9], they had reported a non-significant decrease in visual acuity for both distance and near. However, Mehdizadehkashi et al[8] reported significant changes in visual acuity for both distance and near. In our study, there was no change in near vision but there was decrease in visual acuity for distance. Contradictory to our finding, Sharma et al[11] reported a significant change in visual acuity for near, with consequent loss of accommodation. Retention of fluid in ocular tissues like cornea and lens, due to increased level of estrogen, attributes to decrease in visual acuity secondary to corneal edema[9,10].

Changes in Refraction

In our study, changes in the refractive status occurred in the 3rd trimester of pregnancy. The most common refractive error noted was simple myopia, which improved in the post partum period. In the study by park et al[12], they found to have no change in refraction which was a contradictory finding from our study. But this discrepancy could be attributed to their small study size. Refractive error in pregnancy is likely due to hormonal changes secondary to fluid retention in cornea and lens, which affects its curvature, leading to a myopic shift.

Most of the antenatal women experience visual changes during pregnancy. Since these changes resolve in the post-partum period, no active intervention is needed, although symptomatic correction in patients with significant refractive error can be done.

Simple measures of educating pregnant women and creating awareness in them along with perinatal eye examination, help in the long run to alleviate the anxiousness during the gestational period among them.

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