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Original research article

Anthropometric profile of postmenopausal women subjected for measurement of IOP

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Abstract

Glaucoma is second only to cataract as leading cause of blindness. Population based study have revealed prevalence of glaucoma in India to be 11.9 million and 60.5 million in the world by the year 2010 out of which approximately half are undiagnosed. So control of IOP within the normal range is necessary. The study included 100 postmenopausal in which 50 normotensive and 50 hypertensive with the age group between 45-55yrs who attended the outpatient department of medicine and ophthalmology, were included in our study. Increasing age, gender, higher BMI, postmenopausal status increases risk of hypertension in menopausal women, in addition to these factors non-dipping blood pressure, presence of hypertension, medications itself and possibly increasing testosterone levels puts the postmenopausal women at an increased risk of developing IOP changes.

Keywords: Socio-demographic profile, postmenopausal women, IOP

Introduction

Glaucoma is one of the most common cause of blindness worldwide and third most common cause in developing country like India [1].

Elevated systemic blood pressure is responsible for raised IOP which can progess to glaucoma and blindness. Blindness creates familial, economic and social problems. Systemic hypertension runs in families and relatives of hypertensive patients are at higher risk to develop hypertension and also its ocular complications such as glaucoma [2].

IOP is one of the vital factors whose maintenance within normal limit is essential for serve its normal function. IOP is influenced by various factors like smoking, alcohol, hypertension, sex hormones, pregnancy, medications etc. Changes in IOP are directly and significantly associated with changes in systemic blood pressure with the age. Increase in IOP leads to glaucoma [3]. Glaucoma is second only to cataract as leading cause of blindness. Population based study have revealed prevalence of glaucoma in India to be 11.9 million and 60.5 million in the world by the year 2010 out of which approximately half are undiagnosed. So control of IOP within the normal range is necessary.

Increasing age, gender, higher BMI, postmenopausal status increases risk of hypertension in menopausal women, in addition to these factors non dipping blood pressure, presence of hypertension, medications itself and possibly increasing testosterone levels puts the postmenopausal women at an increased risk of developing IOP changes [4].

Methodology

The study included 100 postmenopausal in which 50 normotensive and 50 hypertensive with the age group between 45-55 yrs who attended the out-patient department of medicine and ophthalmology, were included in our study.

Written informed consent was obtained after detailed procedure of measuring IOP was explained to the individuals who included in our study. Those who satisfy the inclusion and exclusion criteria were subjected to detailed clinical examination including height in meters, weight in kgs, body mass index, blood pressure, pulse pressure, mean arterial pressure and IOP.

Blood pressure was recorded in right arm supine position by using sphygmomanometer by both palpatory

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and auscultatory method averages of three recordings were taken. IOP was recorded by using Goldmann's Applanation Tonometer.

Inclusion criteria

Normotensive and hypertensive postmenopausal women who gave a history of one year of amenorrhea with age group between 45-55yrs.

Exclusion criteria

- Ocular trauma.
- Refractive errors.
- Mechanical and surgical illness.
- Smoker.
- Diabetes.
- Family history glaucoma.
- History of previous ocular surgeries.
- On medication like beta blockers, diuretics and hormone replacement therapy.

Recordings of IOP

Intraocular pressure was recorded by using Goldmann Applanation Tonometer between 10 am to 1 pm to avoid diurnal variations. Patient was informed about the test. Aseptic precautions were taken before performing test. Tonometer was calibrated each time the cornea was anaesthetized with 4% lignocaine eye drops. The patient was made to sit before the slit lamp at the right height with her chin on the chine rest and forehead against the headband. Magnification of slit lamp was set at x10. Flourescein strips were used to stain the eyes. The tonometer was moved forwarded slowly until the prism rested gently on the centre of the patient's cornea, with the other hand the calibrated dial on the tonometer was turned clockwise until the inner lines of the two fluorescein semicircles (mires) coincided(fig 6). The reading on the dial was noted. The prism was withdrawn from the corneal surface and the tip wiped dry. The procedure was repeated for the other eye.

Results

Table 1: Distribution of patients according to age

	GP	N	Mean	Std. Deviation	t	df	P	Inference
Age	Normotensive	50	50.2	1.43	-1.478	98	0.143 (>0.05)	Not significant
	Hypertensive	50	50.6	1.67				

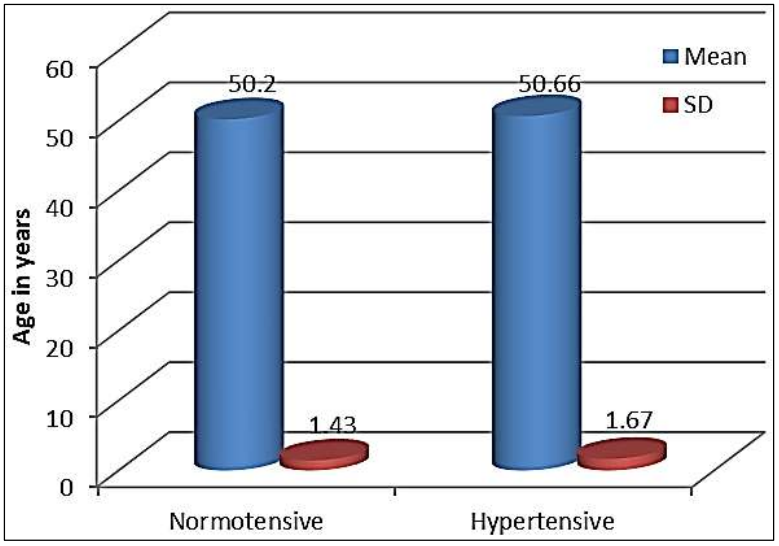

Fig 1: Distribution of patients according to age

Table 2: Distribution according to weight

	GP	N	Mean	Std. Deviation	t	df	P	Inference
Weight	Normotensive	50	62.3	5.3	-0.353	98	0.725 (>0.05)	Not significant
	Hypertensive	50	62.66	4.88				

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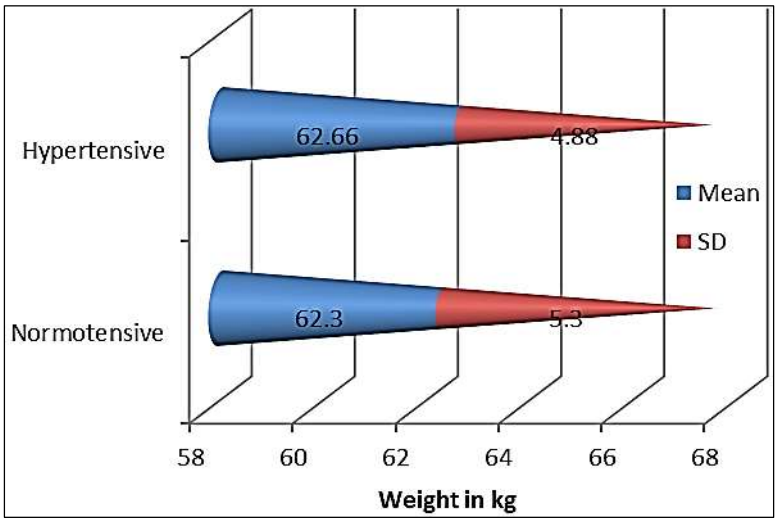

Fig 2: Distribution according to weight

Table 3: Distribution according to Height

	GP	N	Mean	Std. Deviation	t	df	P	Inference
Height	Normotensive	50	1.63	0.05	2.802	98	0.006	Significant
	Hypertensive	50	1.6	0.05			(<0.05)	

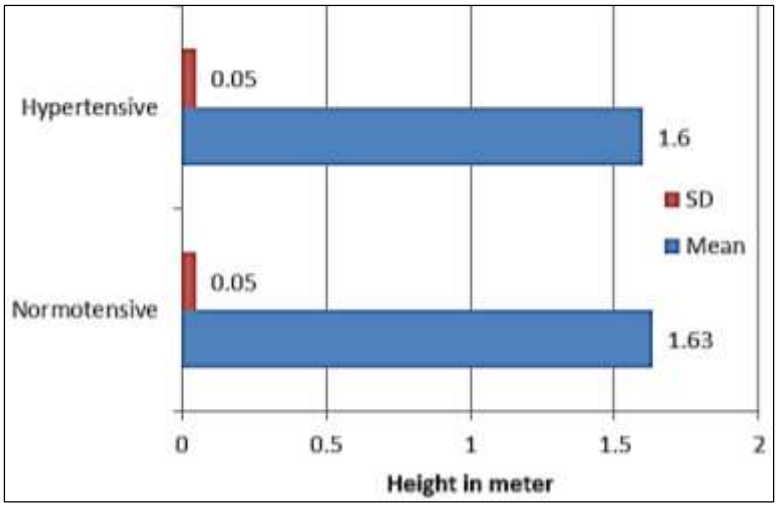

Fig 3: Distribution according to Height

Table 4: Distribution according to body mass index

	GP	N	Mean	Std. Deviation	t	df	P	Inference
BMI	Normotensive	50	23.45	2.39	-1.82	98	0.072	Not significant
	Hypertensive	50	24.35	2.52			(>0.05)	

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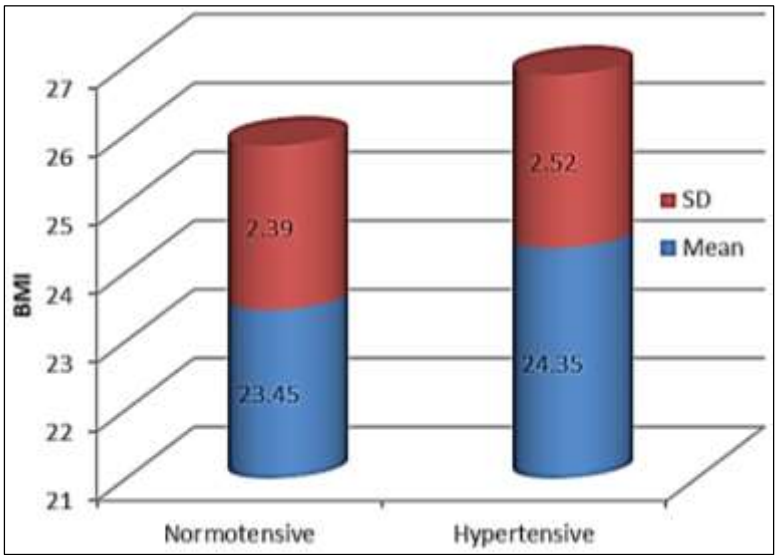

Fig 4: Distribution according to body mass index

Discussion

Shankrappa c *et al*. studied IOP changes in normotensive and moderately hypertensive postmenopausal women. Study included 40 normotensive and 40 hypertensive postmenopausal women shown mean IOP was 15.28±2.54 mm Hg in normotensive and 19.47±3.37 mmHg in hypertensive postmenopausal women. IOP was significantly increased among hypertensive compared to normotensive postmenopausal women. They concluded it is essential to undergo regular eye check up for IOP changes in hypertensive postmenopausal women, IOP is the only modifiable risk factor for glaucoma [5].

Ebeigbe J A *et al*. studied IOP in post menopausal Nigerian women with without systemic hypertension. Mean IOP for premenopausal normotensive women was 14.58 ± 2.56 mmHg while that of postmenopausal normotensive women was 16.15 ± 1.80 mmHg (p<0.05). Also, the difference in mean IOP between premenopausal hypertensive (16.58 ± 3.23 mmHg) and postmenopausal hypertensive women (18.24 ± 3.89 mmHg) was statistically significant (p<0.05). They concluded Menopause significantly increases intraocular pressure. Mean intraocular pressure of hypertensive postmenopausal women was significantly higher than that of normotensive postmenopausal women [6].

Onakoya A O *et al*. studied primary open angle glaucoma and Intraocular pressure Ii patients with systemic hypertension. Study included 150 hypertensive patients and 50 normotensive age-sex matched control.The mean IOP for the hypertensive group was 28.4±10.3 mm Hg and 15.2±5.09 in controls (p<0.001). POAG was present in 58 (38.7%) of hypertensive whilr onliy nine (18%) had POAG in controls (p<0.01). They concluded there is a positive correlation between systemic hypertension and intraocular pressure changes [7].

Saima Irum *et al*. studied mean intraocular pressure in hypertensive adults. Study included 178 diagnosed hypertensive patients. The patients with grade 1 hypertension showed mean IOP of 13.95±3.74mm Hg. while grade 2 and grade 3 hypertension had mean IOP as 18.01±3.33 and 20.21±2.52 mmHg respectively. They concluded higher value of mean IOP was found with increase in systolic and diastolic blood pressure [8].

Klein B E *et al*. studied Intraocular pressure and systemic blood pressure:This beaver dam eye longitudinal prospective study was a population based study of people 43-86yr old (n=3684) are patients followed up for 5 years with measurement of blood pressure, IOP and use of medication for blood pressure. They found significant direct correlations between changes in systemic blood pressure and IOP.There was a 0.21mmHg increase in IOP for a 10mmHg increase in systolic blood pressure and 0.43mmHg increase in IOP for a 10 mmHg increase in diastolic blood pressure. Decreased systolic or diastolic blood pressure of more than 10 mmHg over 5 years was significantly associated with decreased IOP [9].

Nirmala n *et al*. conducted a comparative study of IOP changes in postmenopausal normotensive and hypertensive women. The mean IOP postmenopausal normotensive women were 13.01±2.61mmHg while that of hypertensive women was 15.15±2.16mmHg which was statistically significant. They concluded menopausal women are at increased risk of developing hypertension due to age, hormonal changes and obesity which may lead to increased IOP. IOP is directly and significantly related to systemic blood pressure hence postmenopausal women with systemic hypertension needs periodic ophthalmic examination [10].

Conclusion

The mean BMI among hypertensive group is more compared to non hypertensive group of

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postmenopausal women subjected for measurement of IOP

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