Original Research Article

Malignant hypertensive retinopathy - first clinical sign in young undiagnosed hypertensives

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Abstract

Background: The purpose of the study the clinical profile of young undiagnosed hypertensives presenting as malignant hypertensive retinopathy as the first clinical sign. **Material and methods**: Retrospective data was collected for four years of patients presenting with blurring of vision and evaluation revealing malignant hypertensive retinopathy (grade IV Keith Wagner classification). Blood pressure (BP) measurement showing BP more than 240/140 mm hg. **Results**: A total Eighteen (18) patients were enrolled,14 (77%) were males, with mean age of 28 yrs. Anterior segment examination was normal in all patients. In 9(50%) patients BCVA at presentation was between 6/18 to 6/12, 5(27%) BCVA was 6/60-6/24, 3 patients (16%) BCVA was less than 6/60. On personal history 6 patients were smokers, one was obese and one had positive family history of hypertension, one was diabetic. No other systemic association was found. Four patients were misdiagnosed as optic neuritis, two Central serous chorioretinopathy, two with central retinal vein occlusion and one as posterior scleritis. Creatinine was raised in 3 patients at presentation. At 3 months follow up most 15(83%) regained 6/6 BCVA. In two patients' visual acuity remained 3/60 and one patients regained only 6/24 BCVA. Creatinine was raised in three patients and two patients subsequently required renal dialysis. No secondary cause of hypertension was found in any of the patient. **Conclusion**: Blurring of vision can be early symptom of underlying malignant hypertension. Timely detection and management can prevent end organ damage.
Key Word: Malignant hypertensive retinopathy.

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INTRODUCTION

Hypertension is the leading cause of morbidity and mortality worldwide [1]. Globally there has been a significant increase in incidence of hypertension in adolescents and young adults <40 years of age [2]. Malignant hypertension is a condition characterized by severe hypertension and multi-organ ischemic complications [3]. Patients with undiagnosed hypertension presents commonly with nonspecific symptoms like headache, blurring of vision, tinnitus. Fundus examination of these patients may be the first noninvasive investigation to diagnose underlying undiagnosed advanced hypertension.

Our study aimed to present demographic and clinical profile of undiagnosed young hypertensives presenting as malignant hypertensive retinopathy (HTR) (Grade IV Keith Wagener classification) as the first clinical presentation [4].

METHODS

The study was conducted retrospectively in tertiary referral multispecialty hospital and medical college in Uttarakhand state. The data was collected retrospectively from March 2016 to March 2020 for duration of 4yrs. A total of 18 patients were enrolled in the study with no prior history of hypertension. Patients included were young patient's with age between 18 to 40 yrs. presenting with chief complaints of blurring of vision. Patients previously diagnosed with

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hypertension/on anti-hypertensives were not included in the study. On measuring blood pressure with sphygmomanometer measured blood pressure was more than 220/140 in all patients. Malignant hypertension retinopathy was defined clinically on dilated fundus examination in patients showing both eyes disc edema papilledema of various degrees, arterial narrowing, multiple Superficial hemorrhages, soft exudates and macular star (grade IV Keith Wagner classification) [4]. Documentation of age, sex, personal history, family history, general physical examination, best corrected visual acuity (BCVA), intraocular pressure by non-contact tonometry, anterior segment examination and dilated pupil examination with slit lamp microscopy and fundus photography was done. Fundus fluorescein angiography (FFA) and optical coherence tomography (OCT) was done where patient consented. Patient diagnosed with malignant hypertensive retinopathy were referred to medical emergency for urgent control of blood pressure and were followed for duration of three months.

RESULTS

A total of eighteen (18) patients were enrolled in the study out which14 (77%) were males. Most 13(72%) were in age group between 20yrs to 30 yrs. with mean age of 28 yrs. Anterior segment examination and IOP was normal in all patients. (Table 1) Most patients 9(50%) BCVA at presentation was between 6/18 to 6/12, 5(27%) BCVA was 6/60-6/24, 3 patients (16%) BCVA was less than 6/60. In one patient BCVA was 6/9 at presentation. On personal history 6 patients had history of smoking and alcohol intake, one was obese and one had positive family history of hypertension, one was diabetic. No other systemic association was found. Nine out of 18 patients were misdiagnosed some other ocular disease elsewhere. Four patients were misdiagnosed as optic neuritis and neuroretinitis, two Central serous chorioretinopathy, two with central retinal vein occlusion and one as posterior scleritis. Fundus examination of all patients revealed varying degrees of disc edema, superficial hemorrhages, soft exudates, dot-blot hemorrhages, macular exudates. Neurosensory detachment at macula was noted in 6 patients. FFA was done in five patients only. These patients showed disc leak in late phase. Two patients showed acute CSR like multiple leaks suggestive hypertensive choroidopathy. Creatinine was raised in 3 patients at presentation. At 3 months follow up most 15(83%) regained 6/6 BCVA. In two patients' visual acuity remained 3/60 and one patients regained only 6/24 BCVA. (Table 2) Total optic atrophy and macular atrophy/ischemia with generalized sclerosis of vessels was noted in these patients. On follow up note was made of systemic examination done by medicine department in these patients. All except three patients were managed on OPD basis by medicine department. Complete blood count, chest Xray, ECG, renal function test, echocardiography, ultrasound abdomen for renal artery, thyroid function tests, lipid profile was done in all patients. Creatinine was raised in three patients and two patients subsequently required renal dialysis. In rest of the patients all investigations were within normal range. No secondary cause of hypertension was found in any of the patient.

Table 1 Demographic profile of malignant hypertensive retinopathy patients

Characteristic	Malignant Hypertensive retinopathy patients
Age,mean,(SD),y	28
Sex,No. M:F	14:4
Systemic history at presentation	
Smoking & Alcohol	6
Diabetes	1
Obesity	1
Past history of hypertension	1
Misdiagnosis of malignant HTNR	
CSR	2
Optic neuritis &	4
Neuroretinitis	1
Posterior scleritis	2
Central retinal vein occlusion	

Table 2: Visual acuity and IOP of patients with malignant hypertensive retinopathy patients

Characteristic	At presentation	At 3 months
Visual acuity		
<6/60	3(16)	2(11%)
6/60-6/24	5(27%)	1(6%)
6/18-6/12	9(50%)	0
>6/12	1(6%)	15(83%)
Mean baseline IOP	16	14

DISCUSSION

Hypertension is a leading cause of morbidity worldwide. More than 1 billion persons worldwide suffer from hypertension. According to the World Health Organization, in 2015, raised BP (blood pressure) was responsible for 7.5 million deaths, about 12.8 per cent of the total of all deaths globally. Global Burden of Disease study 2010 attributed 9 million deaths to hypertension, making it the leading cause of death worldwide [5]. Incidence of hypertension in young (adolescents and adults <30 years of age) has increased to alarming rates over the past few decades. The majority (>90%) of young patients have essential or primary hypertension, while only a minority (<10%) have secondary hypertension[6]. In a prospective study, the presence of hypertensive retinopathy diagnosed clinically was correlated with a doubling of the risk of coronary heart disease events [7]. Ocular vasculopathy from hypertension was first described as 'albuminuric retinitis' in malignant arterial hypertension in 1859 by Liebreich [8]. Uncontrolled hypertension can affect different systems of body like cardiovascular, renal, cerebrovascular and retina. Damage to these organs is called Target Organ Damage (TOD) [9]. Hypertension can affect eye in three forms choroidopathy, retinopathy and optic neuropathy [10]. There has been significant evidence that hypertensive retinopathy acts as a predictor of systemic morbidity and mortality due to TOD [9]. Malignant hypertension is uncommon presentation amounting to 1% of hypertensive population but incidence among African–Caribbean's of malignant hypertension is generally higher with an overall of 7.3 per 100,000 of population per year [11]. Men are affected twice as commonly as females. In an analysis of worldwide data for the global burden of HTN, 20.6% of Indian men and 20.9% of Indian women were suffering from HTN in 2005 [12]. Most patients in our study were also young males in age group between 20 to 30 yrs. with no underlying systemic cause. Studies also document that more than 90% of young people with hypertension have primary hypertension [6]. Six out of eighteen patients were smokers otherwise no other significant risk factor was seen in our study. Genetic factors can also play a role with certain genotypes associated with an increased risk of hypertensive retinopathy. Pontremoli *et al*... studied the genetic factors linked to hypertensive retinopathy and found the deletion of the allele of the angiotensin-converting enzyme has a higher risk associated with the development of hypertensive retinopathy [13]. Smoking is considered to have a strong association with severe or malignant hypertensive retinopathy as studied by Poulter *et al*.. [14]. Renal dysfunction (persistent microalbuminuria and low creatinine clearance) in patients has shown to be a marker for hypertensive retinopathy and end-organ damage [9]. Malignant hypertensive retinopathy shares common clinical features with other disease entities like disc edema with macular edema/exudates also seen in central vein occlusion, neuroretinitis, Disc edema with headache or eye ache are also seen in papillitis and posterior scleritis. This is may be the cause of patients being misdiagnosed. Bilateral presentation, no cells and flare and checking blood pressure is key to diagnosis. Visual acuity was good at presentation i.e. 6/24 to 6/12 is most of our patients. Impairment of vision may be the presenting symptom of malignant hypertension in 35 %to 60% of cases [16]. Studies also document good visual prognosis is patients with malignant hypertension if they present early and timely control of blood pressure is achieved [17]. Three patients presented with visual acuity less than 6/60 and these patients had poor visual recovery. These patients had severe disc edema with severe macular exudation at presentation. Total optic atrophy and macular ischemia may be the cause of poor vision in these patients at follow up. Two of these patients also developed acute renal failure subsequently and required renal dialysis indicating the severity of disease and advanced stage they presented in hospital. So, patients presenting early and managed timely have good visual and systemic prognosis.

CONCLUSION

Despite being a common disease, awareness is required about the adverse effects of hypertension and the beneficial effects of antihypertensive therapy. Hypertension is still considered a disease of elderly and many patients with hypertension still remain undiagnosed or inadequately treated. A national program is required to screen young hypertensives and fundus examination should be essential part of it as it gives clue to severity of TOD. Therefore, screening for hypertension especially in young should be a crucial aspect of primary care medicine.

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