Original Article

Retinopathy in Hypertensive Patients Pak Armed Forces Med J 2012; 62 (4): 487-90

FREQUENCY OF DIFFERENT GRADES OF RETINOPATHY IN HYPERTENSIVE PATIENTS AT MILITARY HOSPITAL RAWALPINDI

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ABSTRACT

Objective: To determine the frequency of different grades of retinopathy in hypertensive patients.

Design: Cross sectional study.

Place and Duration of Study: Military Hospital Rawalpindi, June 2010 to December 2010.

Methods: One hundred and ninety four patients with hypertension were divided into four different types of retinopathy, based on history, clinical examination (ophthalmological) and laboratory investigations.

Results: Maximum number of patients were in grade II hypertensive retinopathy – i.e., 25.8 % (50 cases- 33 males and 17 females). A total of 45.9% (89 cases- 60 males and 29 female) of the patients did not have any evidence of hypertensive retinopathy, other patients had grade I, 21.1% (41 cases - 31 male and 10 female), grade III, 5.7% (11 cases- 9 male and 2 female) and grade IV, 1.5% (3 cases-2 male and 1 female) at the time of examination.

Conclusion: Hypertensive patients have a high incidence of retinopathy which is an important indicator of target organ damage. Therefore early diagnosis and treatment of hypertension in time can decrease morbidity due to retinopathy which is an important cause of blindness in hypertensive patients.

Key words: Hypertension, Retinopathy.

INTRODUCTION

Hypertension is one of the leading causes of death over the globe, affecting one quarter of the adult population (60 million in the United States and 1 billion people worldwide)[1-6]. It is the most easily recognized treatable risk factor for stroke, myocardial infarction, heart failure, peripheral vascular disease, aortic dissection, atrial fibrillation, and end-stage kidney disease[2]. Despite the fact that treatment of hypertension can prevent many of its fatal complications, hypertension remains untreated or under treated in the majority of affected individuals in all countries, including those with the most advanced systems of medical care. Inadequate treatment of hypertension is a major factor contributing to some of its complications which can prove fatal such as stroke, heart failure, and kidney failure[3-5].

Timely diagnosis and effective treatment can prevent both morbidity and mortality due to raised blood pressure. Because most cases of hypertension cannot be cured, blood pressure control requires lifelong treatment and follow up[5]. Effective management requires continuity of care by a regular and knowledgeable physician as well as sustained active involvement by an educated patient[4,7,8].

Hypertensive retinopathy is the most common cause of blindness in developed societies[5,7]. In a multi-ethnic cohort in the United States, retinopathy was found in 33% over forty years of age, 8% of whom had vision-threatening retinopathy. Multiple factors may be involved in the added risk of hypertension to the development and progression of retinopathy, including increased endothelial damage[7]. Fortunately, good control of hypertension can reduce the threat of retinopathy even in diabetics, independent of control of hyperglycemia[8,9]. In the UK prospective diabetes study, the risk of retinopathy was reduced 10% for each 10 mmHg lower systolic blood pressure[7,8]. Limited evidence supports an additional protective effect of ACE inhibitors beyond their antihypertensive effect. Retinal venous and arterial occlusion, retinal emboli, retinal

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Received: 08 June 2012; Accepted: 12 Sep 2012

macroaneurysm, and anterior ischemic optic neuropathy are some of the other complications related to hypertension[5,6,8,9].

This study was done because hypertension is a common problem in our setup and the associated target organ damage like retinopathy is an important indicator which if detected and treated effectively can decrease both mortality and morbidity. Hypertensive retinopathy changes can be easily picked up by fundoscopic examination in the OPD's and thus various complications of hypertension can be minimized by timely treatment.

PATIENTS AND METHODS

This study was carried out from June 2010 to December 2010, at the Military Hospital Rawalpindi. A total of 194 patients reporting to the medical OPD or admitted to medical wards, fulfilling the inclusion criteria were included in study and were evaluated for the presence of different grades of retinopathy.

The inclusion criteria for participation in the study was that both genders of diagnosed cases of hypertension of age ≥20 years who had BP ≥ 140/90 mmHg were included in the study.

While participants who had diabetes mellitus, glaucoma, congestive heart failure, renal failure or pregnant females were not included as participants in the study.

Data Collection Procedure

One hundred and ninety four diagnosed cases of hypertension fulfilling the required criteria were selected to participate in the study from medical outpatient departments, medical wards. Informed consent was taken from all the participants of the study. Relevant history and examination were carried out, taking full care of the comfort of the patients and all information was kept confidential. Study proforma comprised of questions about patient's sociodemographic profile like name, age, sex and hospital number. Detailed history about present illness, severity, duration of symptoms and past history relevant to hypertension was noted. Clinical parameters like BP (mean of two readings 10 minutes apart in sitting position) measurement, direct ophthalmoscopy using 1% mydriacil drops to look for changes of microcirculation in the retina were recorded and graded according to Keith-Wagner-Barker classification and verified by consultant ophthalmalogist. All the information were recorded in proforma designed for purpose of study.

Statistical Methods

All the data collected through the performa was analyzd through SPSS version 10. Mean and standard deviation were calculated for quantitative variables. Frequency and percentage were calculated for qualitative variables.

RESULTS

One hundred and ninty four patients were included in the study, 135 (69.6%) were male and 59 (30.41%) were female. The mean age was 56 years. Age range was between 42-71 years, 174 (89.7%) were married while 20 (10.3%) were unmarried. All of them were using combination of medications for the treatment of hypertension. Out of 194 patients 60 (30.92%) were taking their medicines regularly while 134 (69.07%) were not taking their medicines regularly. Hypertensive retinopathy was observed in 105 (54%) patients.

Maximum number of patients had grade II retinopathy i.e 25.8% (50 cases - 33 males, 17 females), other patients grade I retinopathy, was diagnosed in 21.13% (41 cases - 31 males, 10 females), grade III retinopathy was diagnosed in 5.7% (11 cases - 9 males, 2 females) and grade IV retinopathy in 1.54 % (3 cases - 2 males, 1 female) at the time of examination. Whereas 45.9% (89 cases - 60 males, 29 females) of the patients did not show any evidence of hypertensive retinopathy. Out of 135 males 75 (55.55%) had retinopathy and out of 59 females 30 (50.84%) had retinopathy. Mean duration of the disease was 9.43 years.

DISCUSSION

Hypertension is a well known risk factor for different forms of cardiovascular diseases which causes both increased morbidity and mortality[2,3,4]. Hypertension and its related damaging effects are on increase both in our country and globally. In many developed countries, concrete measures both in the

Table 1: Patient distribution according to the grade of retinopathy (n=194)

Frequency of retinopathy	Number (%)
Normal	89(45.9%)
Grade I	41(21.1%)
Grade II	50(25.8%)
Grade III	11(5.7%)
Grade IV	3(1.5%)

prevention and timely treatment of hypertension and its complications have been made and are being strictly followed. But unfortunately in developing countries like Pakistan, due to lack of knowledge and awareness at all levels, the complications of hypertension are on rise which need to be addressed in time to decrease its effects on our economy and also to prevent our health loss[5]. Lack of planning, poor perception of the problem, lack of data registration, shortage of manpower and equipment, poor literature and research work on this problem and financial crisis are some of the main causes due to which we are unable to control this disease and its complications[2,5,6].

Hypertension if not properly treated in time affects microcirculation of the body i.e. retina, kidneys, heart and brain[4-7]. Accelerated hypertension leading to hypertensive retinopathy causes visual disturbances and loss of vision. That is why it is very crucial that every hypertensive patient should be examined properly for the evidence of retinopathy as this is one of the earlier changes seen in the microvasculature of the body and is a good indicator of its complications[9]. If hypertensive retinopathy is detected, it should be treated properly in time according to its grades of severity to avoid vision loss. Hypertensive retinopathy serves as a good indicator of the devastating effects of uncontrolled hypertension on heart and brain also[8]. It alerts us to the fact that treatment is urgent and necessary as the patients with retinopathy may be apparently having no symptom at the time of examination, thus by retinopathy we can assess and predict the damage to microvasculature of brain, kidneys and heart also[3,5,8,10,11].

There is enough data available on the frequency of retinopathy in hypertensive patients both in our country and abroad. Few studies in different areas have been done and only population based studies have been carried out in different selected populations[1,4,7,9]. The best predictor of hypertension is general and focal narrowing of the retinal arteries. Focal narrowing is more closely related with hypertension. These studies revealed greater frequency in males as compared to females[5,9].

In a study conducted in Sweden on Caucasian population with essential hypertension, the prevalence of retinopathy was 54.83%. In our study the overall frequency of hypertensive retinopathy is 54.12% which is comparable with this study[6].

A retrospective study of malignant hypertension in a district hospital Birmingham, 200 patients with malignant and accelerated hypertension were investigated, 95 (47.5%) had grade IV retinopathy and 31(15.5%) had grade III retinopathy[9]. In our study the frequency of grade II hypertensive retinopathy was 25.8% followed by grade I (21.13%), grade III (5.7%) and grade IV (1.54%)[8]. This wide difference is due to the fact that our study was carried out irrespective of the severity of the hypertension, where as above mentioned study was done in people with accelerated or malignant hypertension[9]. The only population based study to investigate the relationship of various retinal lesions to systemic hypertension was carried out by Klein et al in people living in Beaver Dam,[9] in this study 4311 persons were examined, out of which 1479 were hypertensive. While retinopathy was seen only in 336 (22.7%) of these hypertensive patients. In this study the retinopathy was defined by presence of flame shaped retinal haemorrhages and cotton wool exudates as per Modified Airlie House Classification System. Overall prevalence of retinopathy in hypertensive patients in this study was 68.5%. Frequency of retinopathy is 54.12% in our study which is compareable to above mentioned study. Five years later people were again examined and among them 2151 (69.1%) were normotensive and 963 (30.9%) were hypertensive and

retinopathy was seen in 658 patients with frequency of 68.3 % in hypertensive patients[10,13].

CONCLUSION

Hypertensive patients have a high incidence of retinopathy which is an important indicator of target organ damage. Therefore early diagnosis and treatment of hypertension can decrease morbidity due to retinopathy which is an important cause of blindness.

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