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**Prevalence and Risk Factors of Hypertensive Retinopathy in Hypertensive Patients**

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## **Abstract**

Hypertensive retinopathy is one of the major complications of hypertension. Presence of hypertensive retinopathy may be an indicator of presence of other complications of hypertension, commonly nephropathy. This study was carried out in OPD of Hypertension and Research Center, Rangpur, Bangladesh. It was a cross sectional study, systemic sampling method was used to generate the sample of 384 patients.

## **Introduction**

Hypertension affects nearly 26 per cent of the adult population worldwide. Kearney and colleagues estimated that the prevalence of hypertension in 2000 was 26% of the adult population globally and that in 2025 the prevalence would increase by 24% in developed countries and 80% in developing countries<sup>1</sup>. In Bangladesh a nationwide survey in 2010 revealed prevalence of hypertension 17.9%<sup>2</sup>. Hypertension has been reported to be responsible for 57 per cent of all stroke deaths and 24 per cent of all cardiovascular deaths in East Asians<sup>3</sup> Ratindra et al. has shown that 71.2% of the hypertensive patients died due to hypertensive related complications (33.3% due to stroke, 20.3% CAD and 17.8% chronic renal failure)<sup>4</sup>. Because of the high prevalence of this condition and the increased morbidity and mortality associated with this condition, the economic cost of hypertensive disease was estimated at \$76.6 billion in 2010<sup>5</sup>. Eyes are proven hypertensive target organs<sup>6</sup>. The clinical importance of cardiovascular risk factors staging in hypertensive patients is based on retinopathy changes. Some ophthalmoscopic findings are helpful in evaluating the duration, severity, predictions or hypertension vasculopathy effects. Retinal microvascular changes are signs of hypertensive retinopathy and can be useful to classify risk factors and treatment decisions for hypertension. So, earlier detection of hypertensive patients who are in risk to develop target organ damage is very important. In this study we are going to estimate the prevalence and risk factors of hypertensive retinopathy.

## **Discussion**

This was a cross sectional study. Assuming unknown prevalence of hypertensive retinopathy, a sample size of 384 (precision of 5% with 95% of confidence level) was calculated. On an average about 30 patients used to come to Hypertension and Research Center, Rangpur daily. From the daily visited patients every 5th patient was taken to generate sample of 384. The first patient was taken by random sampling from 1st to 10th patient. The study was explained to all the patients and written informed consent was taken. after initial evaluation (duration of hypertension, antihypertensive drug use, dietary and lifestyle modification, follow up interval were commonly asked) blood pressure measurement, systemic examination and direct ophthalmoscopic examination was done in every patient by one of the co-author. Before starting the study, ophthalmoscopic examtion was done in 20 patients and the findings of the patients were verified by an ophthalmologist. All the ophthalmoscopic examtion was done under the supervision of the ophthalmologist. Hypertensive retinopathy was classified according to Keith Wagener Barker (KWB) Grades. The end point of this study was data collection of 384 patients.

In our study we have found prevalence of hypertensive retinopathy was 29.9%. Other studies also found similar prevalence of hypertensive retinopathy (30.6% to 33.9%). In a study performed in 2001 on 800 hypertensive patients, the prevalence of grade 1 and grade 2 retinopathies among hypertensive patients was 46% and 32%, respectively, and only a few patients (60 years) and longer duration of hypertension (>5 years) were correlated with hypertensive retinopathy.

Combined ARB and thiazide diuretic was the maximum used antihypertensive drug (22.36%), followed by ARB alone (22.04%). Though hypertensive retinopathy was high (69.23%) among those who used ARB and beta blocker combination, this result is not the true reflection, because only 4.15% of the hypertensive patients used ARB and beta blocker combination. So, relation of the antihypertensive drug and hypertensive retinopathy needs to be examined in later studies with large sample size. In our study we have used ophthalmoscopic examination to determine and classification of hypertensive retinopathy. Ophthalmoscopic examination has been shown to be unreliable, with high rates of interobserver (20%–40%) and intraobserver (10%–33%) variabilities<sup>5</sup>.proposed that ophthalmoscopic examination has limited benefit in the management of hypertension due to very low prevalence of grade 3 and grade 4 hypertensive retinopathies, the multifactorial backgrounds of grade 1 and grade 2 hypertensive retinopathies and the association of the multiple risk factors of atherosclerosis in a majority of hypertensive cases. Evaluation of hypertensive retinopathy findings in terms of other cardiovascular risks was supported by previous directives of international hypertension management. These directives underlined that hypertensive retinopathy can be evaluated as an indicator for the target organ damage along with left ventricular hypertrophy and chronic renal failure and suggested that physicians should adopt a more aggressive approach in the management of these patients <sup>6</sup>.

### **Conclusion**

In this study more than one fourth of the hypertensive patients had hypertensive retinopathy. Male sex, increasing age (>60 years) and longer duration of hypertension (>5 years) were positively correlated with hypertensive retinopathy

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