

**Study title-” COMPARATIVE STUDY OF ORBITAL DOPPLER PARAMETERS  
IN DIABETICS WITH RETINOPATHY AND DIABETICS/ HEALTHY  
CONTROLS WITHOUT RETINOPATHY “**

**ABSTRACT:**

**BACKGROUND:**

Diabetes mellitus is one of the most common non communicable diseases globally. The prevalence of diabetes in our country is increasing. As the prevalence of diabetes is rising, the systemic complications that include retinopathy, nephropathy and neuropathy and involvement of cardiovascular system are also increasing. Diabetic retinopathy is a vascular disorder affecting the microvasculature of retina caused by changes in the retinal blood vessels. If untreated, it may lead to blindness. Therefore, if diagnosed and treated promptly, blindness is usually preventable. Color Doppler imaging is a new method that enables us to assess the orbital vasculature. It allows for simultaneous two dimensional anatomical and Doppler evaluation of hemodynamic characteristics of retinal artery. For diagnosis of early changes in retinal blood flow in diabetes mellitus without retinopathy duplex color Doppler ultrasonography is the investigation of choice to assess the problem very quickly without any invasive procedures.

**AIM:**

To compare orbital vessel doppler indices in diabetics with retinopathy and diabetics/healthy controls without retinopathy using the color doppler sonography.

## **METHODOLOGY:**

This prospective study include the study population as diabetic without retinopathy (non DR), diabetics with retinopathy(DR) and healthy controls who come to diabetology outpatient department after categorizing by fundoscopy. The final population enrolled in this study composed of 55 patients with non proliferative diabetic retinopathy, 68 diabetic patients without retinopathy, 90 healthy controls without diabetic retinopathy. Patients to be in supine position. Sterile gel will be placed in closed eyelid and Colour Doppler imaging(CDI) done. Measurements include Peak Systolic Velocity (PSV), End Diastolic Velocity (EDV) , Resistive Index (RI) and Pulsatile Index (PI) in ophthalmic arteries(OA),central retinal artery(CRA) and central retinal vein(CRV).These doppler parameters are compared in these three groups.

## **RESULTS:**

- In Ophthalmic artery , PSV showed no statistically significant difference across the groups. EDV was lowest in DR group, followed by non-DR group and was higher in healthy controls. The PI and RI was highest in DR group, followed by non DR group and least among healthy controls.

- In Central Retinal artery ,PSV did not show any statistically significant difference. EDV of Central Retinal artery was much lower in DR group, as compared to non-DR group and healthy controls. PI and RI of CRA also showed declining trend from DR group to non-DR group and healthy controls.

- In Central retinal vein , PI and RI values were highest in DR group, followed by non DR group and lowest in healthy controls .

### **CONCLUSION:**

Ocular blood flow velocity was decreased with increased RI and PI in diabetic retinopathy group . This study concludes that Orbital Colour Doppler Imaging has the potential to provide useful information related to altered ocular blood flow even before the appearance of Diabetic retinopathy thereby enabling early diagnosis of diabetic retinopathy and early intervention.

**KEY WORDS:Colour Doppler Imaging,Peak systolic velocity,End diastolic velocity,Pulsatility Index,Resistivity Index,Diabetic retinopathy.**