

CORRELATION BETWEEN DIABETIC RETINOPATHY STAGES AND RENAL FUNCTIONS IN DIABETICS

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INTRODUCTION

Diabetes mellitus is a metabolic disorder characterized by hyperglycemia associated with long-term damage and failure of various organ systems. The retina and the kidney complications of diabetes both are microvascular complications result from damage to small vessels in these organs that may lead to blindness and end-stage renal disease. Diabetic retinopathy and diabetic nephropathy have a similar pathogenesis, including oxidative stress, massive accumulation of glycation end products, polyol pathway activation, protein kinase C, and genetic factors and also share common clinical risk factors, including age, smoking, hypertension, obesity, and hyperlipidemia. Studies have shown that the presence of diabetic retinopathy itself may leave patients at risk for diabetic nephropathy and the severity of DR is a risk factor for progression to chronic kidney disease and also diabetic nephropathy is an independent risk factor for the development and progression of DR.

AIM OF THE WORK

The aim of this study was to evaluate the associations of diabetic kidney disease with diabetic retinopathy in diabetics.

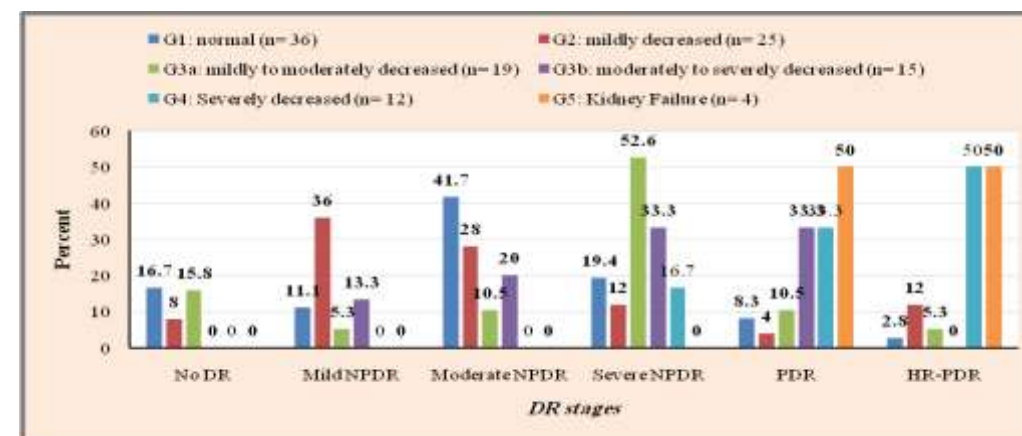
SUBJECTS AND METHODS

This cross sectional study included 111 eyes of 111 diabetic patients. Both eyes were examined and the more severe eye regarding diabetic retinopathy staging was included in the study.

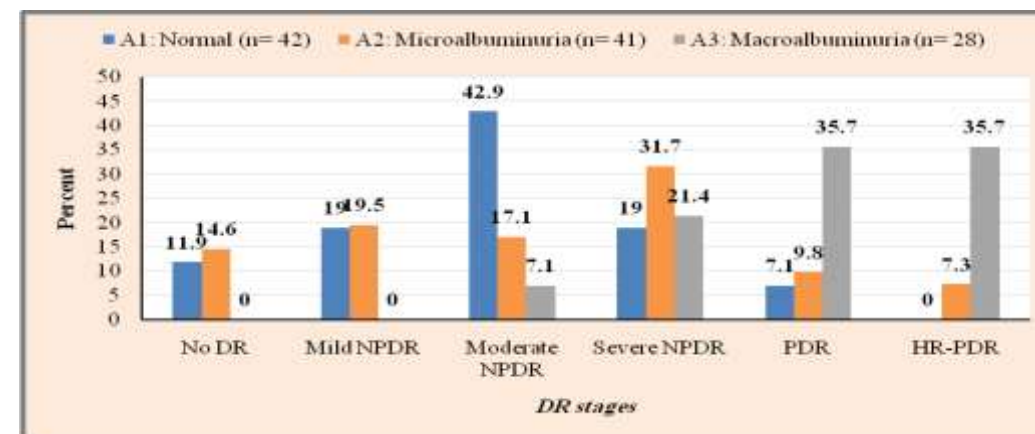
Full medical and ophthalmological history, complete clinical ophthalmological examination, fundus fluoresce in angiography (FFA) using Heidelberg retina angiograph, spectral domain optical coherence tomography (OCT) using spectral domain Heidelberg high definition OCT and assessment of: serum creatinine, estimated glomerular filtration rate (eGFR) and albumin creatinine ratio were done.

RESULTS

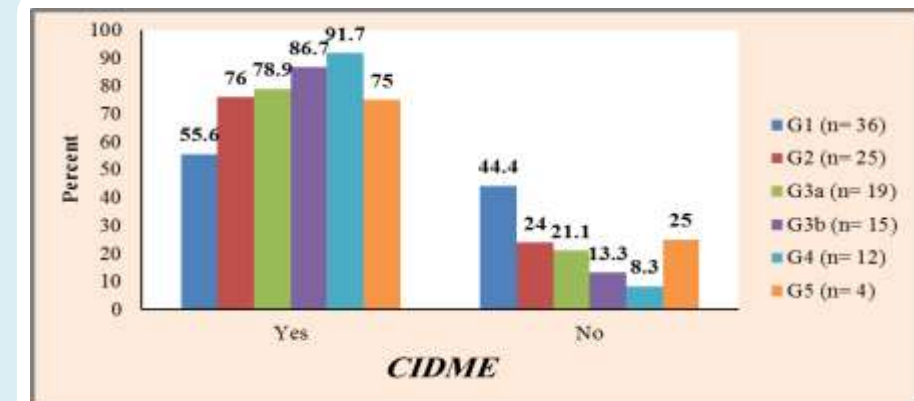
Our study has showed both low estimated glomerular filtration rate (eGFR)<90 mL/min/1.73 m² and presence of albuminuria (albumin creatinine ratio (ACR)) ($\geq 30 \mu\text{g}/\text{mg}$) significantly increased with increased severity of diabetic retinopathy (DR) stages and diabetic macular edema (DME) but this increase was not obvious in grade 5 (G5) chronic kidney disease (CKD) as this difference was not statistically significant, but on exclusion of 4 cases of G5 stage of CKD the percentage of patients suffering from central involving diabetic macular edema (CIDME) significantly increased with the increase in the severity of CKD.



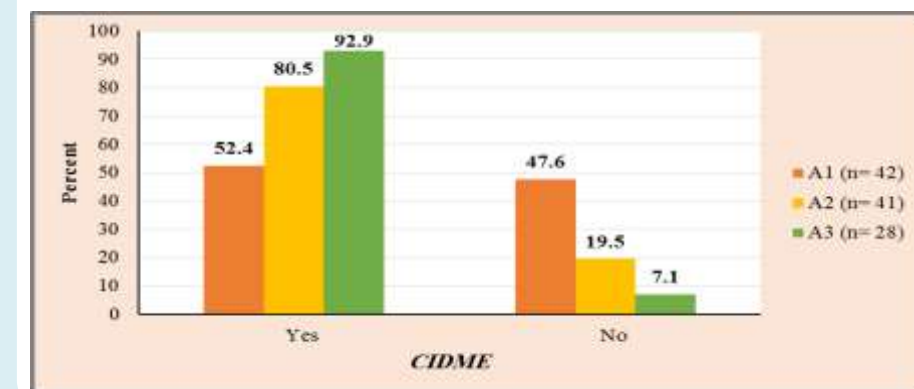
Relation between eGFR and DR stages



Relation between ACR and DR stages



Relation between eGFR and CIDME



Relation between ACR and CIDME

CONCLUSION

In the present study we found that decreased GFR was independently associated with increased DR stage, presence of DME and severe visual impairment.

Also ACR increase was associated with increased severity of DR stage, presence of DME and severe visual impairment.

There is a strong correlation between the severity of DR and the severity of DKD so on the basis of severity of DR we can predict the presence/absence and severity of nephropathy in diabetic patients. Furthermore, in DR patients, even in the absence of proteinuria, we can predict subclinical diabetic nephropathy on the basis of eGFR and we can make appropriate referral to nephrologist for subclinical nephropathy.

All patients with DR should be screened for DKD and vice versa.