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Diabetic Retinopathy in Libyan Patients; Severity and Relation to Systemic Risk Factors

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Abstract: ***Aim: To assess the prevalence and severity of diabetic retinopathy in Libyan diabetic patients referred to the Retina Clinic in the ophthalmology Hospital, Benghazi, and their relation to other risk factors. Assessment of relationship between the severity of diabetic retinopathy and the associated CSMO to: age of patient, duration of DM, HbA1C level, systolic and diastolic blood pressure and blood cholesterol levels. Method: 95 Libyan diabetic patients attending the medical retina at ophthalmology hospital Benghazi were enrolled in the study. All had dilated biomicroscopic fundus examination, blood pressure checked, HbA1c and serum cholesterol levels measured. Results: 95 patients (187 Eyes) were included in the study56 (58.9%) were 39 females while (41.1%) were males, 94 patients (98.9%) had type II diabetes mellitus. Their mean age was 58.1 years. There was NO significant correlation between the presence of CSMO and: Duration of DM, systolic BP, diastolic BP HbA1c, Serum cholesterol. (56.3%) had back ground DR, (5.8%) had pre-proliferative DR, (31.6%) had proliferative DR (4.7%) had advanced diabetic eye diseaseand of those (22.1%) had CSMO. Conclusion: type II diabetes mellitus was the predominant with higher diabetic retinopathy risk.Background diabetic retinopathy is most prevalent presentation.There was no significant relation between the severity of diabetic retinopathy or the CSMO to the hypertension, HbA1c orSerum cholesterol levels; apart from the duration of the disease which is the only predictor for only the severity of DR.***

Keywords: diabetes, Libya, Diabetic Retinopathy

Key messages: background diabetic retinopathy is the most prevalent, duration of the disease is most important risk factor, type 2 DM is the most predominant.

The study was conducted to assess the prevalence and severity of diabetic retinopathy and study it's predictors in Libyan diabetic population.

1. Introduction

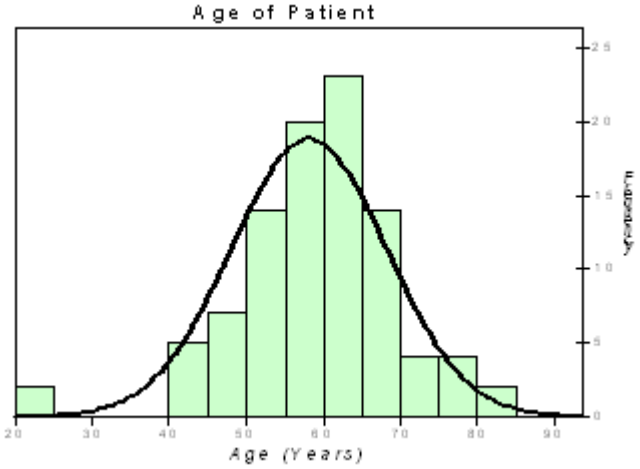
Diabetic retinopathy (DR) is the leading cause of blindness among working- aged adults around the world (1).In Libya the WHO estimated the number of diabetic patients by the year 2000 was 88, 000 which is predicted to jump to 245, 000 by the year 2030; which in fact doesn't really reflect the real situation as the predicted real number of Libyan diabetics is around 300, 000 (2).So even the scarce studies about the diabetes in Libya, doesn't really reflect the real situation of complications specially micro-vascular DR, which wasn't really evaluated in terms of its relation to other systemic diseases and it's prevalence which is not clear too Kadidki and colleagues (3)mentioned that the prevalence of DR in Benghazi was 30.5%. While in Misurata (4) with a smaller sample a different community DR was prevalentin 16.2% of their diabetic sampled.So the data is still conflicting even for DR prevalence not even its risk provokers.

Objectives: This study was conducted to evaluate and assess the prevalence and severity of diabetic retinopathy in Libyan diabetic patients referred to the Retina Clinic in the ophthalmology Hospital, Benghazi, and their relationship to other risk factors and to assess the relationship between the severity of diabetic retinopathy and the associated CSMO to: age of patient, duration of DM, HbA1C level, systolic and diastolic blood pressure and blood cholesterol levels.

Method: 95 consecutive (187 eyes, 3 eyes were artificial) Libyan diabetic patients referred to the retina clinic in Ophthalmology hospital, Benghazi were enrolled in the study. All patients had dilated biomicroscopic fundus examination, blood pressure checked. Investigated for HBA1c, serum cholesterol levels. Data analyzed using SPSS for Windows statistical package.

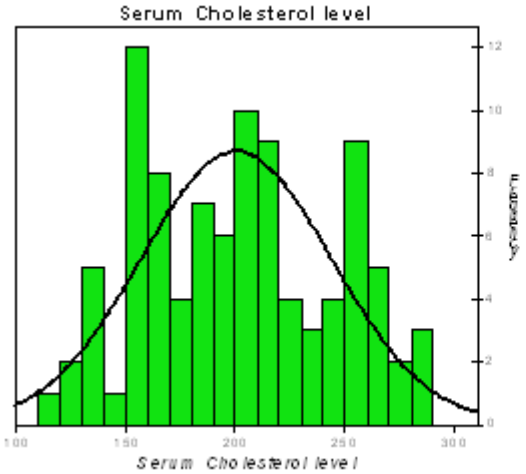
2. Results

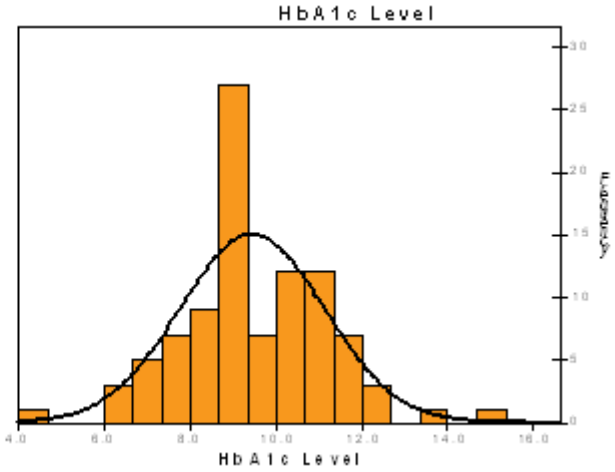
95 patients were included (187 eyes, 3 artificial eyes), 39 (41.1%) were male, while 56 (58.9%) were females.94 patients (98.9%) had type II diabetes mellitus .Their ages ranged between 20 - 81 years, the mean age was 58.1 years (SD =10)



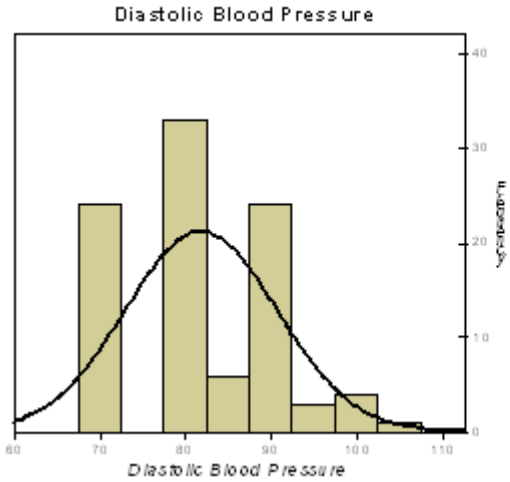
The diabetes duration was between 1 - 26 years with a mean duration of 15.1 years (SD = 6).While HbA1c levels ranged

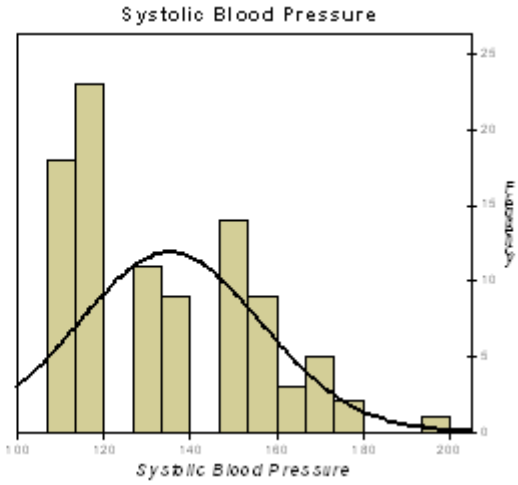
between 4.4 – 14.9, with a mean of 9.4 (SD1.7). Serum cholesterol: Mean: 200.7 (SD: 43.7).Range: 118 – 290.





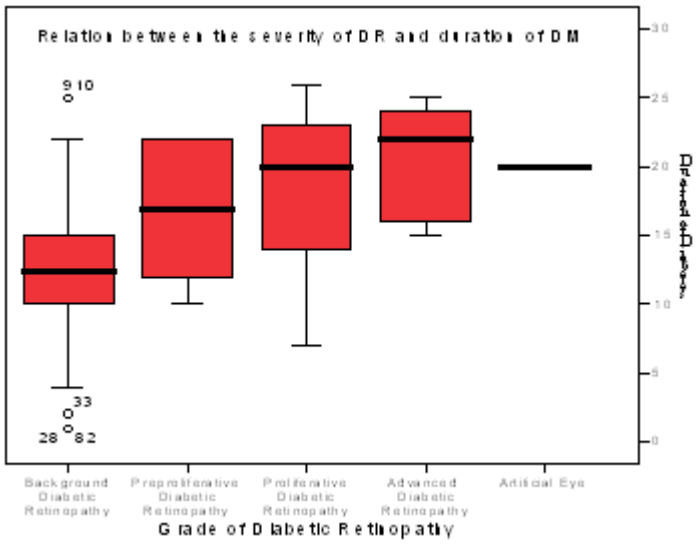
For systolic blood pressure the mean systolic BP was 135.4 (SD: 21.3), that ranged between 110 - 200mmhg.while diastole mean was 81.9 mmHg (SD: 8.9) that ranged 70 – 105 mmHg.





Grading of Diabetic Retinopathy:

- 107/187 eyes (56.3%) had back ground DR
- 11/187 eyes (5.8%) had pre-proliferative DR
- 60/187 eyes (31.6%) had proliferative DR
- 9/187 eyes (4.7%) had advanced diabetic eye disease
- 42/187 eyes (22.1%) had CSMO



The severity of diabetic retinopathy was significantly related to the duration of diabetes P = 0.000

The relation between severity of DR and systolic BP

But there was no significant relation between the severity of diabetic retinopathy and the systolic BP (P = o.694) or the

diastolic BP (P = o.371).And there was neither significant relation between the severity of diabetic retinopathy and the level of HbA1c (P = 0.081), nor the serum cholesterol level (P = 0.241).

There was NO significant correlation between the presence of CSMO and:

- Duration of DM (P = 0.935)
- Systolic BP (P = 0.483)
- Diastolic BP (P = 0.389)
- HbA1c (P = 0.659)
- Serum cholesterol (P = 0.626)

3. Discussion

As of the sedimentary life style, bad cuisine habits and unclear genetic predisposition diabetesis very common in Benghazi and it's control is a real challenge as the poorlycontrolled diabeticswas reaching 80%of the patients (3);in whom complications are the most predominant, diabetic retinopathy prevalence is reaching 30.6% (3), which is a very high percentage as in (5). For assessment of diabetic retinopathy our study was conducted for 95 patients (187 eye) most our patients 58.9% were females and the predominant type was type II diabetes mellitus 98.9%, similar results were reported in Benghazi (2007), where the majorities (87.2%) of the diabetic patients were of type 2 (15)and also consecutive with Misurata (4).Although previous studies (5, 6) have suggested that the later age of the diagnosis the increased prevalence of diabetic retinopathy but we missed this data, the mean age of our patients were 58.1 years, and this can be explained by the late diagnosis as of the silent diabetes, making the duration the strongest predictor of advancement of DR the mean duration was 15.1 years ; as in Wiscinson (11)duration of DM is blamed to be the highest predictor of diabetic retinopathy progression.

Various associated factors were examined, HbA1c level which gives a reflection of the diabetic status in the previous 3 months, the mean result was 9.4% in our study, HbA1c level was a strong predictor of diabetic retinopathy in (4, 7, 9) specially with a longer duration of the disease but in previously published (10)as our study didn't link the severity of diabetic retinopathy to Hba1c levels in contrast to Wiscinson (11), this can be explained that previous control of blood sugar level was done before referral.

High blood pressure levels is another risk factor for atherosclerosis added to the diabetic microvascular changes leading to advancement of retinopathy this was approved by (4, 10)specially systolic (7, 11) as they described that 6.7% of patients with DR reported a previous angina or MI and 5.8% of them reported a recent stroke (7). Serum cholesterol level mean was 200.7mg/dl, previous studies (4, 13)linked the use of Mediterranean diet rich in olive oil can be a great option for improving the microvasculature and even the progression of diabetic retinopathy but in our sample there was no real relationship between the progression of retinopathy and the bad lipid profile as in (10).

According to Kadiki (2) the prevalence of DM in Benghazi was 30.6% in which 29.9% had NPDR and only 0.7% had PDR, most of them were males elder than 55 years diagnosed diabetic more than 7 years. In our study which is conducted in retina clinic (referral center) in Benghazi too again 56.3% of the cases had background DR, 5.8% had pre-proliferative DR and 31.6% with PDR, 4.7% advanced DR, of them 22.1% had CSMO.The high percentage of advanced diabetic retinopathy and PDR can give a real clue about the previous profile of the diabetes in those patients before their referral and risk factors control.

4. Conclusion

Type II diabetes mellitus was the predominant with higher diabetic retinopathy risk.Background diabetic retinopathy is most prevalent presentation.There was no significant relation between the severity of diabetic retinopathy or the CSMO to the hypertension, HbA1c orSerum cholesterol levels; apart from the duration of the disease which is the only predictor for only the severity of DR.

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