Original Article/นิพนธ์ต้นฉบับ

# การตรวจคัดกรองเพื่อค้นหาการเปลี่ยนแปลงที่จอประสาทตาในผู้ป่วยโรคเบาหวาน ณ โรงพยาบาลศรีสังวรสุโขทัย

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**บทคัดย่อ**

การศึกษาวิธีการตรวจคัดกรองการเปลี่ยนแปลงที่จอประสาทตาใน ผู้ป่วยโรคเบาหวาน โรงพยาบาลศรีสังวรสุโขทัย จำนวน 470 ราย ในระหว่างวันที่ 1 กรกฎาคม - 31 ธันวาคม พ.ศ. 2550 พบว่ามีผู้ป่วยที่ตรวจพบมีการเปลี่ยนแปลงที่จอประสาทตา ร้อยละ 30 ทั้งนี้พบว่าเป็นระยะ nonproliferative diabetic retinopathy ร้อยละ 23.40 และระยะ proliferative diabetic retinopathy ร้อยละ 6.60 การตรวจจอประสาทตาอย่างสม่ำเสมอเพื่อหาการเปลี่ยนแปลงที่จอประสาทตาในระยะเริ่มแรก และให้การรักษาที่เหมาะสม สามารถลดความเสี่ยงการเกิดตาบอดจากโรคเบาหวานได้ **จักษุเวชสาร 2551; มกราคม-มิถุนายน 22(1): 12-17.**

**กองจักษุกรรม โรงพยาบาลศรีสังวรสุโขทัย จ. สุโขทัย**

Original Article/นิพนธ์ต้นฉบับ

# Screening for Diabetic Retinopathy in Srisangwornsukhothai Hospital

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**Abstract**

Diabetic mellitus patients were received ophthalmic examination for screening diabetic retinopathy and its complication by the ophthalmologist in Srisangwornsukhothai Hospital among 470 patients during July - December 2007. The prevalence of diabetic retinopathy was 30%, 23.40% was nonproliferative diabetic retinopathy and 6.60% was proliferative diabetic retinopathy. Early detection with appropriate management can reduce the risk of visual loss from diabetes. **Thai J Ophthalmol 2008; January-June 22(1): 12-17.**

***Keywords:*** *diabetic retinopathy (DR), nonproliferative diabetic retinopathy (NPDR), proliferative diabetic retinopathy (PDR)*

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Diabetic retinopathy (DR) is one of leading causes of visual loss and blindness in the world.[1-4] Ophthalmic manifestations of diabetic mellitus are common and discussed in metabolic disease, vascular disease, macular disease, neovascular glaucoma, and orbital inflammation and infection.[2] All structures of the eye are susceptible to the deleterious effects of diabetic mellitus.

Although, at the present there is no cure for diabetic retinopathy and diabetic macular edema, careful examination and appropriate treatment can reduce the 5-year risk of visual loss from diabetes.[1-2]

The frequency of diabetic retinopathy varies with the age of onset as well as the duration of the disease. Approximately 85 percent of patients eventually develop the complication, but some never develop lesions even after 30 years of disease.[3] Retinopathy appears to develop earlier in older patients, but proliferative retinopathy is less common. Ten to 18 percent of patients with nonproliferative retinopathy progress to proliferative disease in a 10-year period. About half of patients with proliferative disease progress to blindness within 5 years. Standard treatment for proliferative diabetic retinopathy is laser photocoagulation and/or pars plana vitrectomy with endolaser photocoagulation.[1-4]

To evaluate the prevalence of DR and its correlation to the duration of diabetes, diabetic patients were screened and evaluated with ophthalmic examination.

## Material and Methods

Diabetic patients who visited Diabetic Mellitus Clinic in Srisangwornsukhothai Hospital from July to December 2007 were included in this descriptive study. The ophthalmic examination was defined as follows:

1. Criteria for patient selection were the diabetic mellitus who had risks for DR (duration of diabetes more than 5 years in type 1 diabetes or poorly control serum blood sugar or type 2 diabetes or with hypertension) and no previous eye examination by an ophthalmologist.

2. The ophthalmic nurses gave the patients preliminary information about DM and its complications, especially DR, to the patients.

3. Ophthalmic examination included visual acuity assessment, refraction, intraocular pressure measurement, slitlamp bio-microscopic examination and fundus examination using indirect ophthalmoscopy with pupillary dilatation.

4. After ophthalmic examinations, diagnosis and further management about DR were informed to the patients and ones who needed the laser or surgical intervention were referred to the regional hospital.

(Staging of DR is classified as Table 1.)

## Results

Four hundred and seventy patients were received eye examination for screening DR by an ophthalmologist (table 2). Coverage of DR screening in this hospital was 25.54% during the study. The prevalence of DR was 30% in this population, 23.40% was NPDR and 6.60% was PDR. The relation of age and DR was found that 49.15% had range of age 51-65 years old (table 3). The prevalence of DR was correlated to the duration of diabetic patients (table 4). In duration less than 5 years, 20.6% of these patients were found developing any stage of DR. Moreover, patients who had diabetes for 11-15 years, the prevalence of DR was increase to 53.03% with 10.61% were PDR. All PDR patients were referred to the regional hospital for further treatment. Associated conditions were observed together with diabetes such as cataract, hypertension, hyperlipidemia and ischemic heart disease. However, a number of diabetis patients with other underlying or associate diseases were too small to discuss any conclusion

**Table 1** International clinical diabetic retinopathy disease severity scale[5]

| Proposed disease Severity level | Dilated ophthalmoscopy findings |
|---|---|
| No apparent Retinopathy | No abnormalities |
| Mild nonproliferative DR | Microaneurysms only |
| Moderate nonproliferative DR | More than just microaneurysms, but less than severe NPDR |
| Severe nonproliferative DR | No signs of PDR, with any of the following:<br>• More than 20 intraretinal hemorrhages in each of four quadrants<br>• Definite venous beading in two or more quadrants<br>• Prominent intraretinal microvascalar anomalies in one or more quadrants |
| PDR | One or more of the following:<br>• Neovascularization<br>• Vitreous or preretinal hemorrhage |

**Table 2** Distribution of diabetic retinopathy.

| | DR | | | Total |
|---|---|---|---|---|
| | none | NPDR | PDR | |
| Male | 65 | 20 | 5 | 90 (19.15%) |
| Female | 264 | 90 | 26 | 380 (80.85%) |
| Total | 329 (70.00%) | 110 (23.40%) | 31 (6.60%) | 470 |

**Table 3** Distribution of diabetic retinopathy among each age group.

| Age group | DR | | | Total |
|---|---|---|---|---|
| | none | NPDR | PDR | |
| 21-35 | 7 | 0 | 0 | 7 (1.49%) |
| 36-50 | 81 | 10 | 2 | 93 (19.79%) |
| 51-65 | 150 | 61 | 20 | 231 (49.15%) |
| >65 | 91 | 39 | 9 | 139 (29.57%) |
| Total | 329 | 110 | 31 | 470 |

**Table 4** Prevalence of DR and duration of diabetes

| Duration (years) | DR | | | | |
|---|---|---|---|---|---|
| | none | NPDR | | PDR | |
| | | number | percent | number | percent |
| 0-5 | 203 | 39/256 | 15.23 | 14/256 | 5.47 |
| 6-10 | 78 | 33/119 | 27.73 | 8 /119 | 6.72 |
| 11-15 | 31 | 28/66 | 42.42 | 7/66 | 10.61 |
| >15 | 17 | 10/29 | 34.48 | 2/29 | 6.89 |
| Total | 329 | 110/470 | 23.40 | 31/470 | 6.60 |

about the relationship of these disorders.

## Discussion

Diabetic retinopathy is the commonest cause of blindness in the working population and is also the most frequent cause of new case of blindness in adults aged 20-74 years. With an appropriate ocular screening and photocoagulation most of this blindness should be preventable.[1-4]

Jenchitr et al[6] found that the prevalence of NPDR was 18.9% and PDR was 3% in all age groups. For the relationship of the duration of diabetes, it showed that the longer duration of diabetes the higher prevalence of diabetic retinopathy. In NPDR, the retinopathy varied from 13.11 to 22.91% in persons having diabetes for less than 10 years and up to 42.86% in those with diabetes for up to 20 years. In the PDR group, the prevalence was 2.15 to 2.42% in persons with diabetes for less than 10 years and up to 10.20% for those with diabetes for up to 20 years. The severity of retinopathy was not only related to longer duration of diabetes but also related to higher glycosylated hemoglobin levels, higher systolic blood pressure and the presence of proteinuria.[7] In the other studies[8-12], the prevalence of DR by indirect ophthalmoscopic fundus examination was 17-31%. Moss, et al[13] conducted a study to monitor patients diagnosed with diabetes for more Than 14 years. The study revealed that 8% of patients with PDR would lose their vision in one eye. There were reports of using nonmydriatic digital fundus camera for screening DR which required less time to perform, no need for using mydriatic drug in most cases.[14-15]

The present study was the first report of DR screening by an ophthalmologist at Srisangwornsukhothai Hospital, Sukhothai province. This prevalence of DR was higher than the study in Lampang Hospital, and Chonburi Hospital. Thirty one patients (6.60%) were PDR and all were referred to regional hospital for further treatment.

## Summary

The ophthalmologists should detect and inform their patients about the importance of the diabetic retinopathy including performed an appropriate treatment to prevent or delay blindness and might be improve the visual acuity of the patients.

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