in Diabetes type 2 than in type 1 (57% x 25%, p<0,01), there was no significant difference concerning the prevalence of macular edema. The presence of retinopathy was not related to visual acuity. Nevertheless, about 50% of the patients with EM had visual acuity of less then 25% in at least one of the eyes, 25% had from 25.1 to 50% and less than 10% had more than 50% (p<0.01). Although nephropathy and levels of Hb1Ac were related to the presence of retinopathy (p<0,05) but not to the presence of EM (p>0,05), we found that 33% of patients with neuropathy have some degree of EM, against only 12% of the patients without this complication (p<0,05). Conclusions: OCT have being proved to be a better exam to diagnose macular edema than ophtalmoscopy. It can make the diagnose earlier and help to prevent the loss of visual acuity, even though we can not predict in which diabetic patients it will occur and by which mechanisms it is related to diabetes complication, like neuropathy

P1044

Preliminary Study on th Frequency and Degree of Diabetic Retinopathy Among a Hospital Population

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Introduction: Retinopathy is considered in the United States the major cause of blindness among adults. Blindness is 25 fold more frequent among diabetic than non diabetic patients being –in type 1 diabetes- the progressive vascular proliferation and retineal shedding the main cause, meanwhile in type 2 diabetes macular oedema is the predominant pathology.

Objectives: To assess the frequency and characteristics of retineal pathology in two samples of diabetic patients (type 1 and type 2) that concurred at a Service of Nutrition in a Community Hospital.

Material and methods: 123 patients were studied, 18 of them having type 1 diabetes and 105 suffered from type 2 diabetes, aged between 19 and 76 years old. Patients were tested for sight accuracy, ocular pressure with an aplanatic tonometer, they went through biomicroscopy and direct and indirect ophtalmoscopy. They were classified after the American Academy of Ophtalmology and the diagnose of macular oedema was obtained by biomicroscopy and Goldmann lens.

Results: We found retinopathy in 66.6% of type 1 diabetic patients and in 41.9% of type 2 diabetic patients. We did not find any difference in sight accuracy between type 1 and type 2 diabetic patients (p<0.756); neither there were found differences of significance in ocular pressure. The degree of retinopathy showed differences in the limit of significance, between type 1 and type 2 diabetic patients. In the univariate analysis type 1 diabetic patients showed a greater degree of proliferative retinopathy in comparison with type 2 diabetic patients (OR=6.2; IC 95% 1.8-21.6; p=0.0019); however, in the type 2 diabetic patients it was possible to find a significant association between the onset of retinopathy and the diabetes duration (p=0.0001). 53.3% of the subjects suffering type 1 diabetes with 10 or more years of evolution showed proliferative retinopathy; in type 2 diabetic patients, this rate was 22.6% (p=0.028)

Conclusions: Frequency of retinopathy was appox. 60% in type 1 diabetes and 42% in type 2 diabetes. The time of evolution of disease (diabetes) seems to be a relevant factor in the development of retinopathy and in particular, proliferative retinopathy.

P1045

Improve of Diabetic Rethinopathy Screening by Using Digital Retinal Camera. Pilot Project Ministerio de Salud(Minsal) - Servicio de Salud Talcahuano(SST), Chile

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The detection of Diabetic Retinopathy (DR) is fundamental to the screening of diabetic patients for complications. However, in Chile, the availability of ophtalmologist is very low so the posibility to send all the patients to be examined by these specialist is actually imposible. To asses with the "Declaración de las Américas" to decrease the incidence of blindness associated to diabetes, el SST y el Minsal started with a pilot project to increase the screening for DR in the 2500 diabetic patients of our Health Service, where they had been previously screened in uncontrolled methods. The data of 2312 patients attending between Jan 1998 to Dec 1999, who underwent to 2 Digital Retinal Imaging (DRI) (one on nasal area and the other on the posterior pole) with a Non-Mydriatic Retinal Camera, TRCNW 5S Topcon of 45°in each eye. Pupils were dilated with Midfrin 2.5% for better results.

Results: 2312 of 2500 (92.5%) patients were photographed in the period,1613 female, 681 male, aged 10-19 y/o:nineteen; 20 to 44 y/o: 251, 45 to 59 y/o: 956; 60 to 64 y/o 355; and 740 patients 65 or over. Only 796 (34%) had a previous direct ophthalmoscopy. We screenned 92.5% (2312) of the population expected to be checked (2500) in two years, compared with the 34% checked previously.The greater increase in screening was in the group with less than 10 years of diabetes (YoD) with a 7 fold in screening and 6.4 fold in diagnosis of DR, compare with 1.05 and 1.5 in screening and 2.3 and 1.8 fold in diagnosis of DR in the groups 10 to 15 and over 15 years of diagnosis respectively. The need to repeat DRI rate was 4.4%.

YoD	n (%)	DR	Prior ex.	Prior DR	δ DR
< 10	1627 (70)	354 (22%)	275	55 (20%)	6.4
10 - 15	269 (12)	133 (50%)	250	58 (23%)	2.3
> 15	416 (18)	229 (55%)	271	128 (47%)	1.8
total	2312	716 (31%)	796	141	5.1

Conclusions: The DRI taked by a Technician is a useful, accessibly and reliable method for screening diabetic Retinopathy in our Helth Care Sistem that increase three fold the exam of retina and five fold the diagnosis of DiabeticRetinopathy in our population. These data support the need to repeat the experience in others Regions of Chile.

P1046

Are Drusen Markers of Impaired Glucose Tolerance?

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Age-related macular degeneration (ARMD) is the chief cause of loss of vision in developed countries. The early stage is characterized by minimal visual impairment, pigmentary abnormalities and large drusen, accumulation of acellular, amourphous debris subjacent to the basement membrane of the retinal pigment epitelium. Since drusen are often found in both diabetics and at least half of the subjects over 50 years old with impaired glucose tolerance (IGT), pathological glucose metabolism could represent a risk factor in developing ARMD.

Aim of study was to evaluate glucose tolerance and insulin sensitivity in patients with early stage of ARMD. Fortyfive healthy volunteers and 110 patients affected by early stage of ARMD underwent physical and ocular examination, fluorescine-angioscintigraphy, Oral Glucose Tolerance Test (OGTT) and Homeostasis Model Assessment (HOMA).

Basal concentrations of glucose and insulin were 4.75±0.66 mM and 10.31±7.46 μU/ml in controls vs 5.24±0.85 mM and 13.79±8.83 μU/ml in patients. After 30 min oral load glucose and insulin values were statistically higher in ARMD (8.73±0.81 vs 5.06±0.59 mM, $p<0.05$; 72.39±41.22 vs 56.23±24.74 μU/ml;$p<0.05$); after 120 min this trend was manteined, but not with statistical difference (6.18±2.67 vs 5.25±1.94 mM; 57.20±42.51 vs 46.02±40.29 μU/ml). HOMA score was 3.35±2.56 in ARMD vs 3.21±2.41 in controls with B-cell function of 192.56±110.33 and 163.24±92.48%.

Despite the lack of statistical significance in some of results, the incidence of IGT in ARMD suggests a role of glucose metabolism in developing macular degeneration. Further investigations are needed to understand whether subjects with more severe form of ARMD are prone to develope insulin resistance or frank diabetes.

P1047

Diabetic Retinopathy and Its Risk Factors Among Ambulatory Cohort of Diabetic Type 1

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Diabetic retinopathy remains the most frequent microangiopathic expression among diabetics type 1. In spite of more effective preventive and therapeutic management the number of diabetics loosing sight is high. For more objective assessment of this persisting after DCCT phenomenon determination of morbidity and risk factors is essential. Therefore the cohort 309 diabetics type 1 supervised in continuous and systematic way in Warsaw Diabetes Out - patient Service was analysed. The study was aimed at the determination of morbidity due to different stages of diabetic retinopathy and the correlation of the morbidity and angiopathic risk factors as: age, sex, diabetes mellitus duration, blood pressure, serum cholesterol and triglycerides, BMI; glycemic indexes and daily proteinuria. The general morbidity index for diabetic retinopathy was 54.7%, for non - proliferative 43.7% and for proliferative retinopathy 11.0%. There was no difference between males and females. The subgroup with retinopathy was older, with higher BMI, fasting glycemia, triglycerides and creatinine serum levels. Also this subgroup was characterised by higher blood pressure and daily proteinuria. The most potent risk was connected with diabetes duration (OR = 9.76) and elevation blood pressure (OR = 3.00). The results of analysis may serve as the base for more multifactorial and complex prevention programme.

P1048

Effect of Panretinal Photocoagulation on Retinal Hemodynamics in Patients with Diabetic Retinopathy

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Purpose: We investigated the effects of panretinal photocoagulation (PRP) on the velocity of retinal circulation in patients with diabetic retinopathy.

Methods: To evaluate retinal hemodynamics, we performed rapid serial fluorescein angiography (30 frames/sec.) with a scanning laser ophthalmoscope. The disc-to-macula transit time (DMTT) was defined as the time interval from the initial appearance of the dye bolus in the central retinal artery to the moment of arrival in a parafoveal capillary. DMTT was measured in 30 normal eyes and in 11 diabetic eyes with preproliferative or proliferative retinopathy before and after PRP. The observation period after PRP was at least 6 months.

Result: Mean DMTT decreased from 9.4±2.0 seconds before PRP to 6.5±1.4 seconds after PRP in 11 diabetic eyes ($P<0.005$). DMTT before and after PRP was significantly longer than mean DMTT in 30 normal eyes (3.7±0.7 seconds; $P<0.001$).

Conclusion: Retinal circulation is retarded in patients with advanced diabetic retinopathy; this is partially corrected by PRP.

P1049

Prevalence of Retinopathy in a Selected South Indian Population in the Chennai Urban Population Study (CUPS)

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Objective: To estimate the prevalence of diabetic retinopathy in an urban population in South India.

Methods: The study subjects were drawn from the Chennai Urban Population Study (CUPS) an epidemiological study involving two residential colonies in Chennai in Southern India. A total of 1262 individuals underwent a screening programme for diabetes (90.2% response rate). 152 diabetic subjects, (91 known and 61 newly detected) were identified. 140 diabetic subjects participated in the retinopathy study (92.1% response rate) of whom 137 underwent four field retinal colour photography. The colour photographs were graded using a modified version of the Early Treatment Diabetic Retinopathy Study (ETDRS) grading system.

Results: The overall prevalence of diabetic retinopathy was 19.0% which included 17.5% with non-proliferative diabetic retinopathy and 1.5% with proliferative diabetic retinopathy. The prevalence of retinopathy among known diabetic and newly diagnosed diabetic subjects were 23.1% and 10.9% respectively. 2.1% of the total population (age standardised - 1.6%, 95% confidence intervals - 1.0 - 2.4) had diabetic retinopathy. Decrease in vision due to retinopathy was seen in 2.9% of diabetic subjects and 0.3% of the whole population. Prevalence of retinopathy increased with increase in duration of diabetes and HbA1c levels. Multiple logistic regression analysis revealed duration of diabetes and serum creatinine to be the factors associated with diabetic retinopathy.

Conclusion: The overall prevalence of diabetic retinopathy was 19.0% and duration of diabetes and serum creatinine were the risk factors for retinopathy. This is the first population based retinopathy study based on retinal photography from South Asia.

P1050

Familial Clustering of Diabetic Retinopathy in Type 2 Diabetic Patients

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Objective: The aim of the study was to determine whether there is familial clustering of diabetic retinopathy among South Indian Type 2 diabetic subjects.

Methods: A total of 7600 Type 2 diabetic patients attending our centre were screened and those who met the following criteria were selected for the study: proband with Type 2 diabetes with one or more diabetic siblings who had also been registered at our centre; both proband and siblings should have had a retinal examination at our centre and resident in Chennai. 322 probands and 355 siblings met the criteria. Statistical analysis was then performed for clustering of retinopathy among siblings of the probands with and without retinopathy.

Results: The overall prevalence of diabetic retinopathy among the siblings of the probands with retinopathy was 35.3% which was significantly higher than the siblings of the probands without retinopathy-11.2% ($p<0.0001$). A higher prevalence of retinopathy in siblings of probands with retinopathy was noted at every interval of duration of diabetes and glycosylated haemoglobin level compared to siblings of proband without retinoapthy. Relative odds ratio for retinopathy for the siblings of proband with retinopathy was 4.3 (95% confidence intervals, 2.4 - 7.8; $p < 0.0001$). Multiple logistic regression analysis revealed that a proband with retinopathy was an independent risk factor for diabetic retinopathy among siblings.

Conclusion: Familial clustering of diabetic retinopathy was observed in South Indian Type 2 diabetic subjects. This is the first report to our knowledge to demonstrate familial clustering of retinopathy in Type 2 diabetes.