INTRODUCTION

The retinal vein occlusions regarding the central vein or the vein branches are frequent vascular disorders of the retina, especially in diabetic patients. The vein occlusions are generally unilateral and have quite a higher incidence. The main causes that lead to the appearance of the retinal vein occlusion are: arterial hypertension, hyperlipemia, cardiovascular rhythm disturbances, tromboembolic diseases and, very important, diabetes mellitus. Vein occlusions are high risk diseases that lead to an important loss of visual acuity. The most severe complications are the retinal and vitreous haemorrhages and the neovascular glaucoma. These complications cannot be treated efficiently.

The treatment of retinal vascular infarcts includes the adjustment of the vascular permeability and the lowering of the blood viscosity and can be realised with anticoagulant factors, isovolemic haemodilution and vasodilatator drugs. The retina argon laser photocogulation is a physical method that destroys the ischemic retinal areas. These areas are generating neovessels which induced the retinal and vitreous haemorrhages and neovascular glaucoma.
MATERIAL AND METHODS

The study was performed between 2000-2004 in the Municipal Clinic of Ophthalmology Arad, the Clinic of Ophthalmology Timisoara and the Diabetes Clinic Timisoara on 48 diabetic patients with central vein occlusion, and 18 diabetic patients with retinal branch vein occlusion. After preliminary information regarding the study was provided, an informed consent was obtained from each patient.

Medical examination and treatment was performed in the Municipal Clinic of Ophthalmology Arad, the ophthalmologic evaluation in the Clinic of Ophthalmology Timisoara and the retina laser treatment in the Diabetes Clinic Timisoara. No significant correlations regarding sex, age, and occupation of the patients were found.

All patients presented non-insulin dependent diabetes mellitus for 10-14 years. The diabetic retinopathy in middle stage diagnosed in these patients was 3-5 year old.

Most of the patients presented 3 or 4 of the following diseases: effort angor, high blood pressure, hypercholesterolemia, ischaemic cardiopathy.

The patients who received treatment were first evaluated by determining the:
- Haematocrit;
- Creatinin;
- Coagulogram;
- Lipids;
- Cholesterol.

Blood pressure was measured and a cardiovascular exam was performed by a specialist.

Dextran 40 perfusion was administered 3 times every 4-5 days, each of those times being followed by perfusion with physiological serum 350 ml + 300 mg Pentoxifilin. Afterwards patients received oral Pentoxifilin 800 mg, 2 pills/day/po.

The effects of Dextran 40 perfusion are:
- Osmotic effect;
- Slight anticoagulant effect;
- Antiagregant.

We also associated to this treatment:
- Anticoagulant treatment;
- Antifibrinolitic agents;
- Treatment of the associated diseases;
- Retina laser photocoagulation.

The isovolemic haemodilution was applied considering:
- Cardiac status of the patient;
- Blood pressure;
- Renal failure.

If the patient had a good cardiac status and a haematocrit between 42-45%, he/she received 500 ml Dextran 40 in perfusion for 60 minutes, followed by 500 ml bleeding. If the patient had a good cardiac status, but a haematocrit lower than 42%, he/she received 250ml Dextran 40 in perfusion for 60 minutes, followed by no bleeding.

If the patient presented heart failure and had a haematocrit higher than 42%, he/she received 250 ml Dextran 40 in perfusion for 60 minutes, followed by 250ml bleeding. If the patient presented heart failure, but had a haematocrit lower than 42%, he/she received 250ml Dextran 40 in perfusion for 60 minutes, followed by no bleeding.

If the systolic value of the blood pressure was lower than 170 mmHg, the patient received 500ml Dextran 40 in perfusion for 60 minutes followed by 500ml bleeding (haematocrit = 42-45%), or if the haematocrit was lower than 42%, the patient received 250 ml Dextran 40 in perfusion for 60 minutes followed by no bleeding.

If the value of the blood pressure was higher than 170 mmHg, the patient received first an antihypertensive treatment, then 500ml Dextran 40 in perfusion for 60 minutes followed by 500 ml bleeding (haematocrit = 42-45%) or if the haematocrit was lower than 42% the patient received 250 ml Dextran 40 in perfusion for 60 minutes followed by no bleeding.

If the patient presented renal failure and the creatinin was over 2 mg% treatment was not performed. If creatinin was 1.2-2 mg%, more investigations were need prior to treatment administration.

The medical treatment was followed by physical treatment which consisted in retina laser panphotocoagulation for central retinal vein occlusion and area photocoagulation for the branch vein occlusion.

RESULTS

The results were evaluated by observing the intraocular pressure, the visual acuity and the ocular funduscopy. No patient developed neovascular glaucoma. The visual acuity didn't suffer any changes. No optical atrophy was noted. The natural history of the retinal vein occlusions includes: retinal haemorrhages, thickening of the retina, the progression of the haemorrhages into the vitreous, neovascularization of the retina and rubeosis iridis. The neovascularization is followed by high intraocular pressure with a significant and irreversible lowering of the visual acuity. The haemorrhages of the retina and of the vitreous cavity lead to blindness.
DISCUSSIONS

We applied the laser treatment in cases with central vein occlusion of the retina or in cases with branch retina vein occlusion in order to destroy the retinal ischaemic areas.

These ischaemic areas correspond to the territory of the obstructed branch retinal vein or to the entire retina in case of a central vein occlusion. The ischaemic areas generate neovascular factors which are responsible of the neovascularization of the retina. The new vessels of the retina are bleeding and the vitreous will be occupied by blood in final stages. This leads to a heavy loss of visual acuity. The neovascular factors of the retina generate the neovascularization of the iris during 3-6 months. The neovascularization of the iris induces neovascular glaucoma which also causes a heavy loss of the visual acuity.

Laser treatment of the retina must not be applied immediately after the vein occlusion, a retinal edema being present. In early stages haemorrhages can also occur, making the laser treatment impossible.

Among the patients that we treated, there was no case of neovascular glaucoma or vitreous haemorrhages during 2 years of observing these patients.

Good results using the same method presented in this paper were obtained by Eckstein et al, Corbu et al, Dhalluin et al.\textsuperscript{3,5}

We are evaluating our results as being good because the usual complications of the retinal vein occlusion didn’t occur during 2 years of observing the patients.

CONCLUSIONS

The medical treatment including anticoagulant factors, vasodilator drugs and isovolemic haemodilution in association with the retina laser photoagulation is recommended in retinal vein occlusions.
REFERENCES


