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USEFULNESS OF PARS PLANA VITRECTOMY IN MANAGING ASYMPTOMATIC EYES OF EALES` DISEASE

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Background: Eales` disease is an idiopathic obliterative vasculopathy that commonly affects the peripheral retina of healthy young males characterized by recurrent vitreous haemorrhage. We did this study to evaluate the usefulness of Pars Plana vitrectomy in asymptomatic eyes of patients presenting with Eales` Disease. **Methods**: Fifty-five patients with Eales` Disease demonstrable on the basis of three mirror fundus exam and Florescein Fundus Angiography with vitreous hemorrhage underwent either Pan retinal photocoagulation or vitrectomy in a span of 3 years. Their fellow asymptomatic eyes were initially treated with laser photocoagulation and after being followed for six months, they were grouped into either progressive cases (Group A) comprising of eleven eyes that underwent early vitrectomy, or non-progressive cases (Group B) comprising forty-four eyes that did not undergo any further treatment. These cases were followed for at least three years (range 38-42 months). **Results:** Out of the eleven eyes of group A, seven (63.63%) showed regression of disease process as compared to only ten out of forty-four eyes (22.72%) in Group-B. **Conclusion**: Early vitrectomy in established cases of Eales` disease provides satisfactory results and helps in preventing complications, which are difficult to treat. Regular checkup of peripheral retina by triple mirror examination should be performed in all asymptomatic fellow eyes of Eales` disease to detect the disease process at an early stage and prevent further complications.

KEYWORDS: Eales` disease, Retinal neovascularization, Retinal vasculitis, Vitreous hemorrhage, Vitrectomy

INTRODUCTION

Eales` disease is an idiopathic obliterative vasculopathy that commonly affects the peripheral retina of healthy young males characterized by recurrent vitreous haemorrhage[1]. Although distributed world wide, it is more common in Southeast Asia[2]. The peak age of onset is between 20-30 years[3].

The etiology is not adequately established[4], and role of tuberculosis[5], hypersensitivity to tuberculoprotein[6], presence of mycobacterium tuberculosis genome in the vitrectomy specimen[7] and epiretinal membrane[8], retinal autoimmunity[9], and presence of class I and II of Human Leucocyte Antigen[10] have all been proposed to be contributing factors.

Patients present with blurred vision and floaters in one eye due to presence of vitreous hemorrhage and on examination, the other eye is also involved in 50-90% cases[11] .Initially the patients present with retinal vasculitis and later as retinal ischaemia, that may lead to vascular alterations and neovascularization[12]. These lesions are particularly seen in periphery of retina and if severe, can involve the posterior pole as well[13].

Recurrent vitreous hemorrhages occur from these new vessels and they may either resolve spontaneously or lead to multiple vitreo-retinal adhesions and tractional retinal detachment and permanent visual loss[14]. The extent and nature of progression in Eales` disease is best demonstrated by fundus florescein angiography[12, 15]. In active stages, there is leakage of dye from inflamed vessels, while in later cases, there is evidence of ischemia, venous shunts and collaterals.

The management aim is to reduce amount of retinal vasculitis, reduce the chances of vitreous hemorrhage by retinal ablation and surgical removal of vitreous hemorrhage[16]. Corticosteroids and photocoagulation[17] remain the mainstay of therapy in the active stage of Eales` disease, whereas vitrectomy alone or combined with other vitreo-retinal surgical procedure is often required in advanced stages[18].

We conducted this study to find out the results of Pars Plana vitrectomy in fellow asymptomatic eyes of Eales` disease patients presenting with unilateral vitreous hemorrhage.

MATERIALS AND METHODS

The study was performed in the Department of Ophthalmology, Military Hospital, Rawalpindi during a span of 03 years (Sep 1999-2002). All patients reporting with complaints and findings suggestive of Eales` disease were taken up in the study, including referrals from peripheral hospitals. Patients were excluded if they had a history of Diabetes, Hypertension, Sarcoidosis, Collagen vascular disorder, high myopia, ocular trauma or surgery, or on examination a corneal or lenticular pathology, and advanced Eales` disease in both eyes e.g. vitreous traction bands, retinal detachment, or macular edema.

The main symptom was sudden painless deterioration of vision in one eye (due to complication of disease process, vitreous hemorrhage being the most common cause (80% cases), followed by branch retinal vein occlusion (5% cases), tractional retinal detachment (2%) and retinal hemorrhage, (2%)). Cases presenting again due to recurrence were also included in the study. Each individual underwent complete ophthalmic examination in both eyes, including 3-mirror fundus examination that revealed neovascularization, peripheral sheathing, or microaneurysms in the retina and areas of leakage or ischaemia as revealed on Florescein Fundus Angiography in either eye.). Blood ESR, Blood Glucose Fasting, Montoux test, Serum ANA, ELISA for Toxoplasmosis, and C-Reactive protein was done in all the cases to rule out mimicking diseases and to bring the subjects into inclusion criteria. These patients were admitted and given a four weeks course of oral prednisolone with the dose of 1mg/kg body weight.

After the course of steroid was gradually tapered, the symptomatic eye underwent either Pan-retinal Photocoagulation (in cases where hemorrhage had resolved) or vitrectomy (in cases of organized vitreous hemorrhage or proliferative vitreoretinopathy). The fellow asymptomatic eyes, total fifty-five (their fundus findings shown in Table-2), were treated with scatter laser photocoagulation and then followed two-monthly for ten months to look for signs of progression. Two groups of same population were thus formed based on convenient sampling whereby eleven eyes were included in Group-A that showed proliferation of new vessels or recurrence of vitreous hemorrhage, and forty-four eyes were included in Group-B that showed no signs of proliferation.

The eleven eyes of Group A underwent Pars plana vitrectomy and the forty-four eyes of Group B were followed up regularly without any further treatment.

A single surgeon (author) operated upon all eyes of group-A, under general anaesthesia using an operating microscope and non-contact imaging lens (EIBOS). A standard, three-port Pars plana vitrectomy was performed, including removal of core and posterior vitreous gel, and clearing of subhyaloid blood. After the fluid-air exchange, endolaser was applied with floron or silicon oil implant where required. Endodiathermy or endolaser controlled active fresh bleeding.

After the surgery, the patients were given systemic steroids for three weeks in tapering doses, and where required the raised intraocular pressure was controlled adequately by systemic and topical carbonic anhydrase inhibitors and beta blockers. Follow-up was done three monthly for the first year and then six monthly for the rest of the period. Their follow up was easy because of the condition of fellow complicated eye. On each follow-up, the visual acuity, vitreous involvement, intraocular pressure and fundus examination findings were recorded. Silicon oil or floron was removed where required after six months of surgery. The findings were presented in frequencies at the end of the study.

RESULTS

All cases were male and the mean age was 27.3 years (range, 16-49 years). An anatomically successful result in the form of a clear vitreous and release of traction bands was achieved in eight out of eleven eyes (72.72%). The most common complication was bleeding from cut fibrovascular stalks during the surgery in eight cases that was controlled by the application of Endolaser.

Recurrence of vitreous hemorrhage was seen in five cases, raised intraocular pressure in four, and damage to lens occurred in one case. Frequency of complications is given in Figure-1. The results, analyzed after three years of follow-up, are summarized in the Table-3.

The results showed improvement in the vitreous pathology (i.e. vitreous hemorrhage, vitreous cells) and fundus picture in seven out of eleven eyes (63.36%) of Group-A, whereas in Group-B the improvement was seen in only ten out of forty-four eyes (22.72%).

Table-1: Results of investigations (Mean±SD) (n=55)

Tests (S.I.units)	**Mean Results**
Blood ESR (mm fall at 1hr)	14±10 mm fall
Blood glucose –fasting (mmoles/l)	5.2±2.60 mmol/l
Montoux test	Positive in 91% Negative in 09%
Serum ANA factor	Positive in 32% Negative in 68%
ELISA for Toxoplasmosis	Positive in 07% Negative in 93%
C-reactive protein	Positive in 32%

	Negative in 68%

DISCUSSION

Vitreous hemorrhage is the most common cause of visual loss in patients of Eales` Disease [1,19]. Given the natural course of disease, its socioeconomic implications, especially in the third world countries, are grave. Various methods have been adopted to treat the secondary complications of this disorder. So far, no preventive measure or disease source has been found to curb the primary lesions[19]. The different methods used to control the secondary stage of disease include systemic steroids [13,] photocoagulation of involved ischaemic areas, and vitrectomy, especially in unresponsive cases.

Table-2: Preoperative findings in asymptomatic eyes (n=55)

Findings	No of Eyes	Percentage (%)
Vitreous hemorrhage (Peripheral).	27	49.09
Perivascular sheathing or exudates.	48	87.27
Peripheral neovascul-arization.	42	76.36
Optic disc neovascul-arization.	15	27.27
Early traction band in vitreous.	4	7.27
Retinitis proliferans.	3	5.45

Table-3: Comparative results at the end of study (n=55)

Groups	Vitreous involvement (Hemorrhage, Cells)		Fundus changes (Sheathing, New Vessels)	
	Present	Absent	Regressive	Progressive
A (11)	4	7	7	4
B (44)	34	10	10	34

Table-4: Comparison of results of studies abroad

Studies	No Of Cases Treated	No of Eyes With Positive Results
Shanmugam *et al* [20]	57	50
Gadkari *et al* [21]	25	18
Kumar *et al* [22]	13	20
Badrinath *et al* [23]	14	18
Own	11	7

In longstanding non-resolving vitreous hemorrhage, vitrectomy is the only option available and sometimes even in spite of prior photocoagulation, hemorrhage occurs in these patients[1]. With repeated episodes of bleeding, the chances of spontaneous absorption of blood decreases and complications of organized long-standing blood in vitreous cavity increase. In these cases, the benefits of Pars Plana vitrectomy are well documented[18]. Vitrectomy serves many purposes- it ensures a clear optical axis, permits visualization of the retina for photocoagulation, relieves vitreous traction, in some cases promotes the regression of new vessels, and if vitreous hemorrhage recurs in a vitrectomised eye, the reabsorption is faster[20].

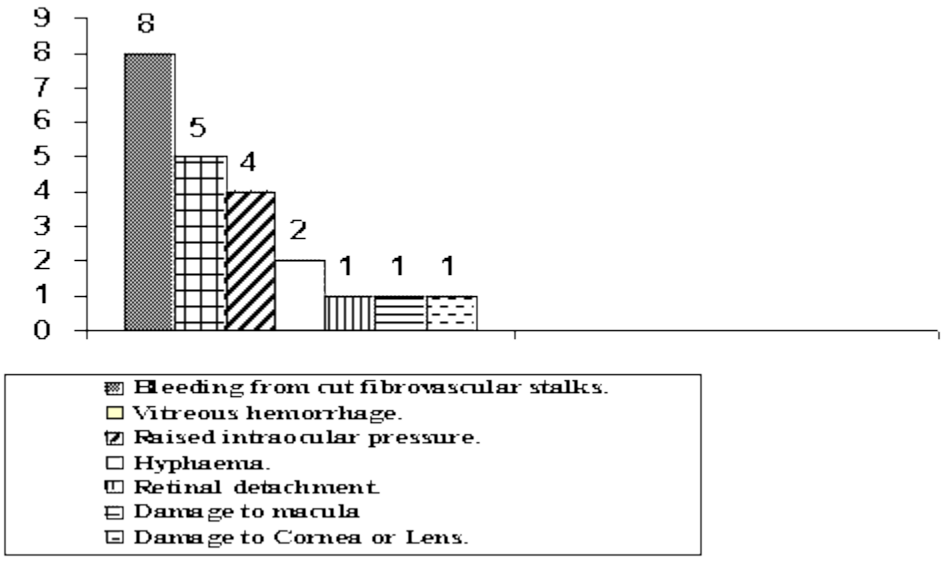
In our study, we tried to emphasize on the point that asymptomatic eyes of Eales` disease also need monitoring, as this point was not documented before and previously any mode of therapy was limited to the symptomatic eyes only.

After an initial detailed evaluation of the fundus and involvement of the vitreous in both eyes, the findings showed that disease was bilateral in forty-seven cases (85.45 %).

Results of the study were analyzed after three years of follow-up. The results regarding visual outcome of Group A were very encouraging. It showed that resolution of disease process occurred in seven out of eleven eyes (63.63%). This shows that in patients having progressive lesions, surgery has remarkably good results. In Group-B, on the other-hand, the follow-up showed the disease regression occurred in only ten eyes (22.72%) that reflect a bad prognosis in uninterrupted cases that were initially having non-progressive lesions. A comparison between our results with similar studies abroad is shown in Table-5.

The complications of the procedure were minimal and did not adversely affect the out come to result in any case. The most common was rebleeding from neovascular fronds during the procedure. Various methods can be used to control this, such as endolaser, endodiathermy, or post-operative photocoagulation may be performed. We performed endolaser to control such episodes.

Figure-1: Frequency of complications after surgery in group-A (n=11)



CONCLUSION

Early intervention of cases of Eales` Disease by pars plana vitrectomy gives good control of disease process. We recommend mandatory triple mirror examination in both of the eyes of Eales` Disease patients to detect and manage early changes of disease process and limit its complications.

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