ROLE OF INTRAVITREAL TRIAMCINOLONE IN DIABETIC MACULAR EDEMA

INTRODUCTION

Over the last decade, management of diabetic macular edema (DME) has undergone a paradigm change (1). Newer diagnostic tools and pharmacological agents have contributed to better understanding and management of the condition (2). The prevalence of DME in patients with diabetic retinopathy is 2.7%–11% (3). The incidence of DME in 10-year-old and 15% in patients with type 1 diabetes mellitus, 13.9% in patients with type 2 diabetes using insulin, and 25.4% in type 2 diabetics not using insulin as described in the WESDR (Wisconsin Epidemiologic Study of Diabetic Retinopathy) (3). Several studies have demonstrated the role of inflammation in diabetic retinopathy (DR) and DME. Both VEGF and non-VEGF pathways contribute significantly to DME. Several studies on steroids for treatment of DME have been undertaken to study their anti-inflammatory and anti-edematous effects. There is inhibition of arachidonic acid pathway by corticosteroids, via phospholipase A2 blockade. This further blocks the synthesis of leukotrienes, prostaglandins and thromboxanes, preventing vasodilatation and increasing the permeability of capillaries. Also these agents stabilize the lysozymes and blood retinal barrier (BRB), decrease inflammatory mediators and VEGF synthesis and inhibit cell proliferation. Corticosteroids are found to increase the efficacy of IVTA on visual acuity and macular thickness, at a tertiary care hospital of Uttarakhand, in diabetic patients suffering from DME.

MATERIAL AND METHODS:

All patients of DME, attending eye OPD of Himalayan Institute of Medical Sciences, Uttarakhand, over a period of 12 months and who did not receive any treatment for it in last 4 months, were included in the study. Patients with uncontrolled diabetes mellitus, hypertension, cardiac or renal disease, concurrent ocular disease such as retinal vein occlusion, uveitis, hazy media interfering with fundus evaluation, glaucoma suspects, established glaucoma patients, or patients requiring surgery within 3 months of enrollment were excluded. After detailed history and examination, pre-injection fundus fluorescein angiography (FFA) was done to classify the type of macular edema, optical coherence tomography (OCT) macula was done to assess the macular thickness. Single IVTA injection was given to all proven cases of diabetic macular edema. A total of 49 eyes of 30 patients were included in the study and patients were examined after treatment to look for improvement in vision and change in macular thickness, noted clinically and confirmed by FFA and OCT at 6 and 12 weeks interval.

RESULTS:

Of total 30 patients, 18 were males and 12 were females. Study group was further divided into three groups on the basis of foveal thickness on OCT as: Group I (200–400µm), Group II (401-600µm), Group III (>600µm). Maximum number of patients had a BCVA value within 6/18-6/24 range (69.4%). Out of 49 eyes, 11 were phakic and 38 were pseudophakic. The mean pre-injection macular thickness in the study group was 505.12 (±/128.7) µm.

Table 1 shows BCVA at 6 weeks and 12 weeks post IVTA. Overall, post injection, there was increase in BCVA in all the three groups at 6 weeks and 12 weeks (p=0.0015). Post injection the macular thickness reduced and BCVA improved, thus proving IVTA to be effective in the treatment of DME.

CONCLUSION:

The study showed that triamcinolone acetonide is an effective treatment of DME.
Diabetic macular edema is found to be the most common cause of persistent vision loss, second only to vitreous or pre-retinal hemorrhage (11). IVTA has shown promising results in various studies conducted all over the world, for the treatment of refractory DME. Steroids have been proved to be useful in pseudophakic patients showing poor response to intra-vitreal anti-VEGF injections and in pregnant patients. Also, steroid injections are a cheaper modality of treatment and reduce the number of injections compared to anti-VEGF injections (12). In present study, there was increase in BCVA in the study group. The macular thickness in different groups, post-injection IVTA, decreased significantly at 6 weeks and 12 weeks. On correlating pre and post-injection BCVA and macular thickness, it was observed that as the macular thickness reduced and the BCVA improved, thus proving the effectiveness of the injection. Various clinical trials have been undertaken to assess the efficacy of IVTA in the treatment of DME. A study by Jonas et al was conducted to compare 10 DME patients without a history of laser in the past to a group of 16 controls who had undergone previous laser photocoagulation. It was found that there was no significant change in visual acuity in both the groups at the end of 3 months follow-up (13). Massim et al also found a significant reduction in the central macular thickness in the eyes of patients not responding to laser compared to control eyes. But the study observed that the effect did not last more than 24 weeks as the DME recurred (14).

Landmark study by Martidis et al on 16 eyes with CSME, not responding to at least 2 previous sessions of laser photocoagulation, showed improvement in vision and decreased macular thickness on OCT after IVTA (15). Study by Ahmed et al was conducted in 42 eyes, to evaluate the outcome of IVTA in DME. The study found the mean visual acuity improved by 0.02 logMAR units, while the central subfield thickness improved by 18.36 µm at the end of 6 months post IVTA (16). Ozkan et al showed that post bevacizumab injection there was more rapid and frequent recurrence of macular edema compared to those with injection IVTA (17). Liu et al compared the efficacy of IVTA and intravitreal bevacizumab (IVB) for treating CSME and showed that IVTA was better than IVB in reducing central retinal thickness and in improving BCVA (18).

The limitation of the present study was a small sample size and a short follow-up period. Further studies on long term safety and efficacy of IVTA and complications of repeated injection of IVTA are required.

**CONCLUSION:**

The current study showed that triamcinolone acetonide is an effective treatment for DME. Post injection eyes showed improved visual acuity and reduction of macular thickness.

**REFERENCES**
