ORIGINAL ARTICLE

A COMPARATIVE STUDY OF INTRAVENOUS METHYL PREDNISOLONE VERSUS DEXAMETHASONE IN MANAGEMENT OF PATIENTS WITH POSTERIOR SCLERITIS

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ABSTRACT

Introduction: Posterior scleritis is a relatively uncommon condition and often misdiagnosed due to varied manifestations. The main stay of treatment is systemic steroids and immunosuppressive therapy. The present study was done to compare the effect of intravenous methyl prednisolone and the conventional intravenous dexamethasone in management of patients diagnosed with posterior scleritis at a tertiary eye care center.

Methodology: It was a retrospective comparative study of 6 patients of posterior scleritis at a tertiary eye care center which were treated primarily with intravenous methylprednisolone or dexamethasone. Group A and B comprised of 3 patients each. Group A patients were started on intravenous Methylprednisolone therapy wherein a dose of 1gm in 500ml of 5% Dextrose was infused over 2 hours under cardiac monitoring for 3 days. Group B patients were administered 08 mg intravenous Dexamethasone twice daily for first 3 days. Subsequently on 4th day patients of both groups were switched over to 1.5 mg/ kg body weight of oral Prednisolone therapy in tapering dose.

Results: control of pain and inflammation was achieved faster in group A patients treated with intravenous methylprednisolone as compared with group B patients receiving intravenous dexamethasone. Though the final visual and clinical outcomes were nearly the same.

Conclusion: Patients of posterior scleritis treated with intravenous Methylprednisolone had a quicker and a more effective response when instituted early in the disease in comparison to Intravenous dexamethasone.

Keywords: Posterior Scleritis, Pain, Inflammation, Methyl Prednisolone, Dexamethasone, Ultrasonography, Computed Tomography.

INTRODUCTION

Posterior Scleritis is defined as inflammation of sclera, which may start primarily posteriorly or may be an extension of anterior scleritis. The clinical presentation is varied and the diagnosis is easily missed, particularly in cases with no pain or no anterior segment involvement.[1, 2] Clinical features include decreased vision, pain, proptosis or restricted ocular movements. The ocular features of posterior scleritis include exudative retinal detachment, choroidal detachment, subretinal fibrosis, subretinal mass, retinal folds, choroidal folds, macular and optic disc edema.[1] Several inflammatory and non-inflammatory ocular diseases such as posterior uveitis, Vogt-Koyanagi-Harada syndrome, pseudotumour of the orbit, and central serous chorioretinopathy can closely mimic this condition.[3,4,5,6] It is a rare disease and the mean age at onset is 49 years.[4,5] Posterior scleritis can also be a clinical manifestation of presumed ocular TB.[7] Patients more than 50 years of age with posterior scleritis have increased risk of associated systemic disease and more likely to be associated with visual loss, hence these patients require systemic immunosuppressive therapy for management of disease.[8,9] The autoimmune nature of scleritis also is supported by the frequent association with systemic autoimmune disorders and by the favorable response to immunosuppressive therapy. [8] Posterior scleritis can present in various ways, mimicking orbital tumors, orbital inflammation, optic neuritis and vasculitis. [6,7,8] Early diagnosis is important because prompt treatment often leads to complete resolution with excellent visual recovery.[8,9] Ultrasonography has been found to be very useful in the diagnosis of posterior scleritis.[10,11,12] Computed Tomography (CT) scan[13,14,15,16] and fundus fluorescein angiography (FFA) [17] also be used as ancillary tests. The main stay

of treatment of posterior scleritis is systemic steroids. Intravenous methylprednisolone pulse therapy is used in the cases of severe eye inflammatory diseases.[18,19,20]

Pathophysiology: An autoimmune dysregulation in a genetically predisposed host is presumed to cause scleritis.[7,8] Inciting factors may include infectious organisms, endogenous substances or trauma. The inflammatory process may be caused by immune complex–related vascular damage (type III hypersensitivity) and subsequent chronic granulomatous response (type IV hypersensitivity). The following interact as part of the activated immune network, which can lead to scleral destruction: immune complex vessel deposition in episcleral and sclera perforating capillary and postcapillary venules (inflammatory microangiopathy) and cell-mediated immune responses. The autoimmune nature of scleritis also is supported by the frequent association with systemic autoimmune disorders and by the favorable response to immunosuppressive therapy. [7,8] Most common association with scleritis is Rheumatoid Arthritis , Wegener's disease, Inflammatory bowel disease, Systemic lupus Erythematosus , Polyarthritis nodosa. Patients undergoing pterygium surgery with adjuvant therapy with Mitomycin- C or Beta irradiation have increased risk for infectious scleritis. Posterior scleritis can also be a clinical manifestation of presumed ocular TB.[7]

The aim of the current study was to assess and compare the efficacy of the two drugs methylprednisolone and dexamethasone in relieving the pain and inflammation.

METHODOLOGY

Six cases with diagnosis of posterior scleritis were selected at Armed Forces hospitals in Pune (a referral and tertiary eye care center) between March 2010 and Jun 2014. This study was done on six cases only as it is a rare and uncommon condition.

Group A and B comprised of 3 patients each. Group A patients were started on intravenous Methylprednisolone therapy wherein a dose of 1gm in 500ml of 5% Dextrose was infused over 2 hours under cardiac monitoring for 3 days. Group B patients were administered 08 mg intravenous Dexamethasone twice daily for first 3 days. Subsequently on 4th day patients of both groups were switched over to 1.5 mg/ kg body weight of oral Prednisolone therapy in tapering dose.

Patients were studied to evaluate the response with intravenous methyl prednisolone and dexamethasone in treating the posterior scleritis. Ethical committee permission was taken prior to the study and written informed consent was taken from each patient.

Diagnostic Criteria: The diagnostic criteria for diagnosing posterior scleritis included at least four of the following: exudative retinal detachment, Uveal effusion with choroidal folds posterior to equator, Sub retinal mass posterior to equator, Unilateral disc edema, Diplopia and painful ocular movement and local tenderness, Mild ptosis /proptosis, T - Sign and increased scleral thickness on ocular ultrasound or CT scan

The exclusion criteria were as follows: Previous episode of posterior scleritis, uncontrolled diabetes mellitus and bilateral cases of posterior scleritis.

Grouping of patients: Group-A patients were treated with intravenous methyl-prednisolone. Group-B patients were treated with intravenous dexamethasone.

Soon after diagnosis of posterior scleritis was made, group-A patients were started on 1 gm IV methylprednisolone in 500 ml of 5% Dextrose over 2 hrs was given daily for 3 days under cardiac monitoring. Group-B patients were administered 08 mg intravenous dexamethasone twice daily for first 03 days. Subsequently on 4th day the patients of both groups were switched over to 1.5 mg /kg body weight of oral prednisolone therapy. The oral prednisolone therapy was continued for at least 03 weeks or at least a week after resolution of all clinical signs and symptoms and then tapered off. The response to the two regimens was evaluated and compared at day 1, 3, 7, 14 and 30. At each visit, the patients were examined on slit-lamp, IOP, indirect ophthalmoscopy and ocular ultrasound was done.

The clinical parameters evaluated for comparison were pain, visual acuity, inflammation of anterior and posterior segment and the time taken for symptomatic improvement.

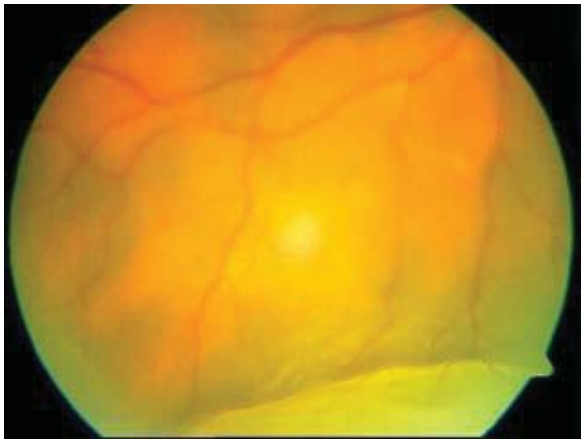

Figure 1: Exudative Retinal Detachment

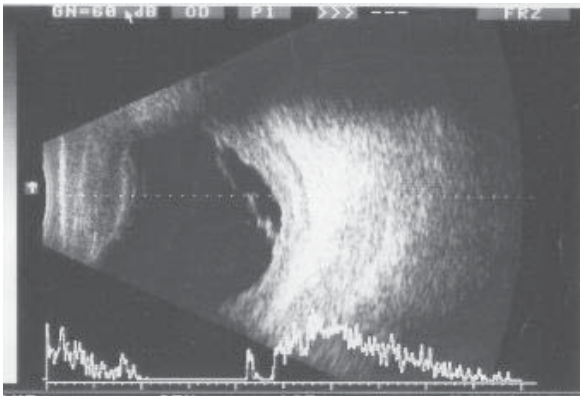

Figure 2: Exudative Retinal Detachment

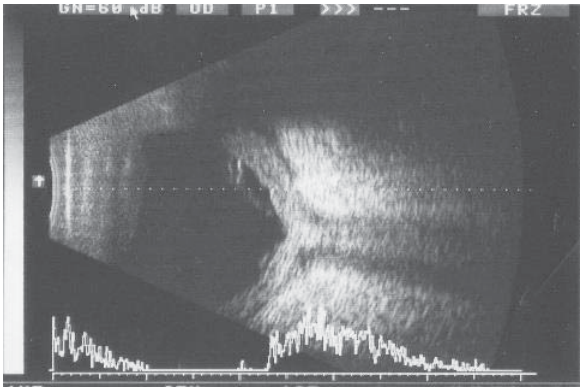

Figure 3: T sign (suggestive of Posterior Scleritis)

RESULTS

Group A: Control of pain was seen as early as 24 hrs. Inflammatory symptoms started settling by 48-72 hrs. By day 7, all 03 patients had marked control of inflammatory symptoms. Distant uncorrected visual acuity at the end of day 10 was ranging between 3/60 - 6/60 in these 03 patients. Group-B: Control of and pain took about 48-72 hrs. Inflammatory symptoms started settling down after 72 hours. Patients were completely asymptomatic by day 10. At the end of day 10, the visual acuity was between 4/60 and 6/60 in the 03 patients.

Table 1: Comparison of symptoms and visual acuity in patients

Variable	Group A	Group B
Relief of Pain	24 hours	48-72 hours
Relief of Inflammation	48-72 hours	>72 hours
Visual acuity	3/60 -6/60	4/60 – 6/60

This shows that intravenous methyl prednisolone had a quicker and more effective response as compared to intravenous dexamethasone when instituted early in the disease.

DISCUSSION

The present study was conducted on six patients to compare effect of intravenous methyl prednisolone and dexamethasone in management of posterior scleritis at a tertiary eye care center. Six patients were divided in two groups and effect of intravenous methyl prednisolone and dexamethasone were studied. Control of pain and inflammation was better in patients treated with methyl prednisolone. Good response to intravenous methylprednisolone is reported in refractory posterior scleritis and this also is known to reduce the recurrence.[17,18,21]

Patients with posterior scleritis need to be on long term steroids or immunosuppressive drugs. Oral steroids take a longer duration for control of inflammation and intravenous methylprednisolone is known to control the inflammation faster and reduce the recurrence. [19] Early introduction of methylprednisolone may reverse or mitigate the inflammatory process and there improve visual prognosis.[19] Response to intravenous methylprednisolone was dramatic and was followed by complete resolution of active disease within a month.[19] Comparison with other studies could not be done as no study was done earlier on comparison of intravenous methylprednisolone and dexamethasone in cases of posterior scleritis as per literature search. The earlier studies were done on varied presentation of posterior scleritis, diagnostic dilemma and treating patients with oral steroids or intravenous methylprednisolone or immunosuppressive agents singly or in combination.

CONCLUSION

Intravenous methyl prednisolone pulse therapy showed a quicker and more definitive response in the initial 03 days of instituting therapy for posterior scleritis. A relatively slower response to therapy was seen in cases treated with intravenous dexamethasone though the final visual and clinical outcomes were nearly the same. The definitive advantages of intravenous methyl-prednisolone vis-à-vis intravenous dexamethasone in sight threatening posterior scleritis are: faster recovery and aggressive control of inflammation and less sequelae of inflammatory response due to severe scleritis. Thus intravenous methyl-prednisolone is preferred in posterior scleritis if cardiac monitoring facilities are available.

REFERENCES

1. Ozdek SC, Gürelik G, Hasanreisoğlu B. An atypical posterior scleritis case: A diagnostic challenge. Retina 2001;21:371-3.
2. Benson WE, Shields JA, Tasman W, Crandall AS. Posterior scleritis: a cause of diagnostic confusion. Arch Ophthalmol. 1979; 97:1482–1486. [PUBMED]

3. Benson WE Posterior scleritis. *Surv Ophthalmol* 1988;32:297-316.

4. Watson PG, Hayreh SS. Scleritis and episcleritis. Br J Ophthalmol. 1976; 60:163–191. doi: 10.1136/bjo.60.3.163.

5. McCluskey PJ, Watson PG, Lightman S, Haybittle J, Restori M, Branley M. Posterior scleritis: Clinical features, systemic associations, and outcome in a large series of patients. Ophthalmology. 1999; 106:2380–6.

6. Biswas J, Mittal S, Ganesh SK, Shetty NS, Gopal L. Posterior scleritis: Clinical profile and imaging characteristics. Indian J Ophthalmol. 1998; 46:195–202.

7. Gupta A, Gupta V, Pandav SS, Gupta A. Posterior scleritis associated with systemic tuberculosis. Indian J Ophthalmol 2003;51:347-9.

8. Cleary PE, Watson PG, McGill JI, Hamilton AM. Visual loss due to posterior segment disease in scleritis. Trans Ophthalmol Soc UK. 1975; 95:297–299.

9. Meyer-Paul AR, Watson PG, Franks W, Dubord P. "Pulsed" immunosuppressive therapy in the treatment of immunologically induced corneal and scleral disease. Eye 1987:1-487-95.

10. Munk P, Nicolle D, Downey D, Vellet AD, McKeoun M. Posterior scleritis: ultrasound and clinical findings. *Can J Ophthalmol* 1993; 28:177.

11. Cappaert WE, Purnell EW, Frank KE. Use of B-sector scan, ultrasound in the diagnosis of benign choroidal folds. *Am J Ophthalmol* 1977; 84:375-79. [PUBMED]

12. Rochels R, Reis G. Echography in posterior scleritis. *Klin Monatsbl Augenheilkd* 1980;177:611-13.[PUBMED]

13. Chaques VJ, Lam S, Tessler HH, Mafee ME Computed tomography and magnetic resonance imaging in the diagnosis of posterior scleritis. *Ann Ophthalmol* 1993; 25:89-94.

14. Trokel SL. Computed tomographic scanning of orbital inflammations. *Int Ophthalmol Clin* 1982;22:81-98..[PUBMED]

15. Trokel SL, Hilal SK. Submillimeter resolution of CT scanning of orbital diseases. *Ophthalmology* 1980; 87:412-17. [PUBMED]

16. Leo JS, Halpern J, Sackler JP. Computed tomography in the evaluation of orbital infections. *Computerized Tomography* 1980; 4:133-38. [PUBMED]

17. Norton EWD. A characteristic fluorescein angiographic pattern in choroidal folds. *Proc R Soc Med* 1969; 62:119-28.

18. Wakefield D, McCluskey P, Penny R. Intravenous pulse methylprednisolone therapy in severe inflammatory eye disease. Arch Ophthalmol 1986; 104:847-51.

19. Bappal A, Puthran N, Hegde V. Benefits of early treatment with intravenous methylprednisolone in recurrent posterior scleritis. Arch Med Health Sci 2014; 2:214-6.

20. McCluskey P, Wakefield D. Intravenous pulse methyl prednisolone in scleritis. Arch Ophthalmol 1987; 105:793-797.