

**ORIGINAL RESEARCH**

# Evaluation of IL-8 levels in intermediate Uveitis patients

<sup>1</sup>Dr. Deepa Rai, <sup>2</sup>Dr. Rajiv Brijlal Mundada<sup>1</sup>Associate Professor, Department of Pathology, Santosh Medical College, Ghaziabad, Uttar Pradesh, India  
<sup>2</sup>Assistant Professor, Department of Ophthalmology, Saraswathi Institute of Medical Sciences, Hapur, Uttar Pradesh, India**Corresponding Author**

Dr. Rajiv Brijlal Mundada

Assistant Professor, Department of Ophthalmology, Saraswathi Institute of Medical Sciences, Hapur, Uttar Pradesh, India

Received: 18 April, 2013

Accepted: 21 May, 2013

**ABSTRACT**

**Background:** Intermediate uveitis (IU), pars planitis, chronic cyclitis, peripheral uveitis, vitritis, cyclochorioretinitis, chronic posterior cyclitis and peripheral uveoretinitis are the names that have been used to describe inflammation in the anterior vitreous, ciliary body and the peripheral retina. Interleukin-8 (IL-8) is a chemoattractant cytokine produced by a variety of tissue and blood cells. Hence; the present study was conducted for evaluating IL-8 levels in intermediate Uveitis patients.

**Materials & methods:** A total of 50 patients with presence of intermediate uveitis were enrolled. Another set of 50 subjects of healthy controls were enrolled as control group. Complete demographic and clinical details of all the patients was obtained. Blood samples were obtained and serum IL-8 levels were evaluated using auto-analyzer. All the results were recorded in Microsoft excel sheet and was subjected to statistical analysis using SPSS software. **Results:** Mean age of the patients of the intermediate uveitis group and control group was 43.1 years and 40.8 years respectively. Mean IL-8 levels among patients of the intermediate uveitis group and control group were 723.8 pg/ml and 208.7 pg/ml respectively. Significant results were obtained while comparing mean IL-8 levels among intermediate uveitis group and control group.

**Conclusion:** IL-8 levels are significantly altered in intermediate uveitis patients.

**Key words:** Intermediate Uveitis, IL-8

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-Non Commercial-Share Alike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

**INTRODUCTION**

Intermediate uveitis (IU), pars planitis, chronic cyclitis, peripheral uveitis, vitritis, cyclochorioretinitis, chronic posterior cyclitis and peripheral uveoretinitis are the names that have been used to describe inflammation in the anterior vitreous, ciliary body and the peripheral retina. Uveitis encompasses entities of varying duration, severity, location and above all a vast plethora of possible etiologies with quite similar and overlapping presentations. Examination of a patient with uveitis needs to be meticulous as the incidence of association with systemic diseases is high. Uveitis is often diagnosed based on clinical features alone (e.g. Fuchs' heterochromic iridocyclitis, serpiginous choroiditis), with the help of ancillary tests (fundus fluorescein angiography, indocyanine green angiography, optical coherence tomography or with the help of laboratory tests (sarcoid, tuberculous and syphilitic uveitis).<sup>1-3</sup>

Interleukin-8 (IL-8) is a chemoattractant cytokine produced by a variety of tissue and blood cells. Unlike many other cytokines, it has a distinct target specificity for the neutrophil, with only weak effects on other blood cells. Interleukin-8 attracts and

activates neutrophils in inflammatory regions. The importance of neutrophil functions has been recognized in periodontal disease for many years. Neutrophils represent the major population of immigrant cells in periodontitis. In diseases with neutrophil dysfunctions periodontal tissue is lost very rapidly. The response of neutrophils to IL-8 is characterized by migration of the cells, the release of granule enzymes, and other intra- and extracellular changes. Connective tissue constituents are efficiently degraded by neutrophil enzymes, released upon activation. Interleukin-8 is a member of the Interleukin-8 supergene family that includes other small chemotactic peptides with structural homology. It also shares with other cytokines DNA sequence features that suggest common regulatory pathways. In vivo intracutaneous application of IL-8 induces local exudation and a massive, long-lasting accumulation of neutrophils. Though IL-8 plays a role in the cytokine network, its major pathophysiological role lies in affecting neutrophils.<sup>4-6</sup> Hence; the present study was conducted for evaluating IL-8 levels in intermediate Uveitis patients.

## MATERIALS & METHODS

The present study was conducted for evaluating IL-8 levels in intermediate uveitis patients. A total of 50 patients with presence of intermediate uveitis were enrolled. Another set of 50 subjects of healthy controls were enrolled as control group. Complete demographic and clinical details of all the patients was obtained. Blood samples were obtained and serum IL-8 levels were evaluated using auto-analyzer. All the results were recorded in Microsoft excel sheet and was subjected to statistical analysis using SPSS software.

## RESULTS

Mean age of the patients of the intermediate uveitis group and control group was 43.1 years and 40.8 years respectively. Mean IL-8 levels among patients of the intermediate uveitis group and control group were 723.8 pg/ml and 208.7 pg/ml respectively. Significant results were obtained while comparing mean IL-8 levels among intermediate uveitis group and control group.

**Table 1: Comparison of IL-8 levels**

IL-8 (pg/ml)	Intermediate uveitis	Controls
Mean	723.8	208.7
SD	83.9	41.8
p-value	0.001 (Significant)	

## DISCUSSION

Intraocular inflammation, or uveitis, incorporates a diverse group of infectious and immune-mediated disorders and is often associated with life-threatening systemic disease and vision-threatening ocular complications. In addition, some conditions masquerade as uveitis posing a diagnostic challenge. Correct set of investigations may aid in timely and accurate diagnosis and treatment of both ocular and any systemic conditions associated, thus decreasing morbidity and mortality.<sup>6-9</sup> Hence; the present study was conducted for evaluating IL-8 levels in Uveitis patients.

Mean age of the patients of the intermediate uveitis group and control group was 43.1 years and 40.8 years respectively. Mean IL-8 levels among patients of the intermediate uveitis group and control group were 723.8 pg/ml and 208.7 pg/ml respectively. Significant results were obtained while comparing mean IL-8 levels among intermediate uveitis group and control group. Klok AM et al assessed laboratory indicator for systemic involvement in intermediate uveitis. Interleukin 8 (IL-8) and C reactive protein (CRP) serum levels were measured in patients with idiopathic intermediate uveitis (n = 61), uveitis controls (n = 143), and normal controls (n = 29). The records of those with intermediate uveitis were reviewed with the emphasis on disease activity and severity as characterised by the presence of cystoid macular oedema, vitreous exudates or snowbank formation, papillitis, and periphlebitis. Increased

serum IL-8 (> or = 20 pg/ml) was found in 27 out of 61 patients with intermediate uveitis (p < 0.01), 12 of 27 patients with sarcoid uveitis (p < 0.05), in 19 of 30 patients with HLA-B27 associated acute anterior uveitis (p < 0.05), and in five of 29 healthy controls. Raised IL-8 levels in intermediate uveitis were significantly associated with active disease (p < 0.001) and the presence of vitreous exudates (p < 0.001), papillitis, and periphlebitis (p < 0.01). Elevated CRP levels were found in 12 of the 143 uveitis controls but in none of the intermediate uveitis patients or normal controls. During follow up an associated systemic disease was more frequently noticed in patients with an elevated serum IL-8 at entry into the study. Elevated IL-8 serum levels were found in patients with active intermediate uveitis of unknown origin.<sup>10</sup>

Huhtinen M et al determined the presence of systemic inflammation and innate immune responsiveness of patients with a history of acute anterior uveitis but no signs of ocular inflammation at the time of recruitment. Tumour necrosis factor alpha (TNF-alpha) production in response to bacterial lipopolysaccharide (LPS) was studied using whole blood culture assay; levels of TNF-alpha in culture supernatants, and soluble interleukin 2 receptor (sIL-2R) in serum were determined by chemiluminescent immunoassay (Immulite); monocyte surface expression of CD11b, CD14, and CD16 and the proportion of monocyte subsets CD14(bright)CD16(-) and CD14(dim)CD16(+) were studied with three colour whole blood flow cytometry; and serum C reactive protein (CRP) levels were determined using immunonephelometric high sensitivity CRP assay. The CRP level (median, interquartile range) was significantly higher in 56 patients with previous uveitis than in 37 controls (1.59 (0.63 to 3.47) microg/ml v 0.81 (0.32 to 2.09) microg/ml; p=0.008). The TNF-alpha concentration of the culture media per 10(5) monocytes was significantly higher in the patient group than in the control group in the presence of LPS 10 ng/ml (1473 (1193 to 2024) pg/ml v 1320 (935 to 1555) pg/ml; p=0.012) and LPS 1000 ng/ml (3280 (2709 to 4418) pg/ml v 2910 (2313 to 3358) pg/ml; p=0.011). The background TNF-alpha release into the culture media was low in both groups. CD14 expression of CD14(bright)CD16(-) monocytes, defined as antibody binding capacity (ABC), was similar for the patients and controls (22,839 (21,038 to 26,020) ABC v 21,657 (19,854 to 25,646) ABC). Patients with previous acute anterior uveitis show high innate immune responsiveness that may play a part in the development of ocular inflammation.<sup>11</sup>

## CONCLUSION

IL-8 levels are significantly altered in intermediate uveitis patients.

**REFERENCES**

1. Foulds WS. The uses and limitations of intraocular biopsy. *Eye (Lond)* 1992;6:11–27.
2. Rutzen AR, Ortega-Larrocea G, Dugel PU, Chong LP, Lopez PF, Rao NA. Retinal and choroidal biopsy in intraocular inflammation: A clinic-pathologic study. *Trans Am Ophthalmol Soc.* 1994;92:431–58.
3. Priem H, Verbraeken H, de Laey JJ. Diagnostic problems in chronic vitreous inflammation. *Graefes Arch Clin Exp Ophthalmol.* 1993;231:453–6.
4. Palexas GN, Green WR, Goldberg MF, Ding Y. Diagnostic parsplana vitrectomy report of a 21-year retrospective study. *Trans Am Ophthalmol Soc.* 1995;93:281–308.
5. Verbraeken H. Diagnostic vitrectomy and chronic uveitis. *Graefes Arch Clin Exp Ophthalmol.* 1996;234(Suppl):S2–7.
6. Midnea E, Segato T, Piermarocchi S, Boccato P. Fine needle aspiration biopsy in ophthalmology. *Surv Ophthalmol.* 1985;29:410–22.
7. Gregor RJ, Chong CA, Augsburger JJ, Eagle RC, Jr, Carlson KM, Jessup M, et al. Endogenous Nocardia asteroides subretinal abscess diagnosed by transvitreal fine needle aspiration biopsy. *Retina.* 1989;9:118–21.
8. Szucs G, Kawai M, Suranyi P, et al. Correlations of monocyte phagocytic receptor expressions with serum immune complex level in systemic lupus erythematosus. *Scand J Immunol* 1994;40:481–4.
9. Frankenberger M, Sternsdorf T, Pechumer H, et al. Differential cytokine expression in human blood monocyte subpopulations: a polymerase chain reaction analysis. *Blood* 1996;87:373–7
10. Klok AM, Luyendijk L, Zaal MJ, Rothova A, Hack CE, Kijlstra A. Elevated serum IL-8 levels are associated with disease activity in idiopathic intermediate uveitis. *Br J Ophthalmol.* 1998 Aug;82(8):871–4
11. Huhtinen M, Repo H, Laasila K, Jansson SE, Kautiainen H, Karma A, Leirisalo-Repo M. Systemic inflammation and innate immune response in patients with previous anterior uveitis. *Br J Ophthalmol.* 2002 Apr;86(4):412–7. doi: 10.1136/bjo.86.4.412. PMID: 11914210; PMCID: PMC1771091.