

Prevalence of subclinical anterior uveitis in adult patients with inflammatory bowel disease

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Abstract

Aim—To assess the prevalence of subclinical anterior uveitis in adult patients with inflammatory bowel disease.

Methods—In 179 consecutive patients (96 with Crohn's disease, 55 with ulcerative colitis, and 28 with inflammatory bowel disease of undetermined nature) without previous or concurrent ocular complaints, quantitative flare measurements were obtained with the Kowa FC laser flare to detect the presence of subclinical uveitis.

Results—The mean flare value was 3.9 (SD 1.1) ph/ms in patients younger than 30 years of age, rising to 5.8 (2.5) ph/ms in those over 60 years of age. No measurement performed in this patient population fell outside the mean observed value plus or minus SD of the normal controls within the same age category.

Conclusion—In an adult population of 179 consecutive patients with inflammatory bowel disease the presence of a form of subclinical uveitis, as described by Hofley *et al* in a group of juvenile patients, is highly unlikely.

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Uveitis is associated with numerous systemic diseases. In patients with inflammatory bowel disease, Crohn's disease, or ulcerative colitis a number of ocular abnormalities have been described, most commonly anterior uveitis and (epi)scleritis. Other ocular complications are described more incidentally such as keratopathy, intermediate uveitis, retinal vasculitis, and multifocal choroiditis.¹⁻¹²

The reported prevalence of uveitis in patients with inflammatory bowel disease varies from 2% to 10%.^{2 6 8 9 11} Anterior uveitis has been associated with subclinical inflammatory bowel disease^{13 14} and has been reported in patients with clinically manifest inflammatory bowel disease and subclinical uveitis. However, the latter has only been observed in children.^{15 16}

Daum *et al* observed the presence of asymptomatic uveitis in six out of 19 children with Crohn's disease, while Hofley *et al* reported six cases in 97 juvenile patients with Crohn's disease. Neither author identified any case of uveitis in 57 patients with ulcerative colitis.^{15 16}

Asymptomatic uveitis presented as cells and/or increased flare in the anterior chamber of one or both eyes observed by slit lamp examination. This subclinical anterior uveitis did not cause discomfort or visual disturbance and completely disappeared after several weeks without any specific treatment. To our knowl-

edge the presence of subclinical anterior uveitis has not been studied in adult patients with inflammatory bowel disease. Laser flare photometry, a highly sensitive and accurate measurement of changes in flare values undetectable even by conventional slit lamp examination, is the ideal method for detecting subclinical anterior uveitis.¹⁷⁻²² This study was undertaken to determine whether subclinical anterior uveitis, as described in juvenile patients, is also present in adult patients with inflammatory bowel disease.

Methods

PATIENTS

A total of 201 consecutive patients visiting the inflammatory bowel diseases clinic of the Academic Medical Centre between July 1998 and April 1999 were asked to participate in the study. Exclusion of patients was based on a present or previous diagnosis of clinically manifest ocular inflammation including all types of uveitis (n=2) and (epi)scleritis (n=9). Patients with ocular disease known to influence flare values such as diabetes mellitus, vascular occlusions, ocular tumours, medically treated glaucoma, recent fluorescein angiography, or previous ocular surgery (n=9) were excluded. In two patients flare values could not be measured.

All patients included in the study gave their signed informed consent to participate. The measurements were taken by the same person who was not informed about the clinical diagnosis, clinical course, or the treatment received by the patient.

Clinical data from each patient on the status of their inflammatory bowel disease were collected at the same time as the flare measurement and included duration and type of inflammatory bowel disease, present medication, localisation of disease process within the intestinal system, and disease activity.

All 54 normal controls were recruited from persons accompanying patients to the ophthalmology clinic. In addition to the exclusion criteria stipulated for the patients, normal controls were not allowed to have a history of any important systemic disease or any intestinal complaints.

LASER FLARE MEASUREMENT

Laser flare measurements were made using the Kowa FM-500 laser flare meter (Kowa Electronics and Optics, Tokyo, Japan). Measurements were made without the use of mydriatics according to previously described methodology of laser photometry.^{18 20 23-26} In short, seven measurements with an acceptably low

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Table 1 Mean flare values in photons/ms according to age in patients and controls.

Age	Crohn's disease					Ulcerative colitis					Indeterminate IBD					Controls				
	No	Mean	SD	Min	Max	No	Mean	SD	Min	Max	No	Mean	SD	Min	Max	No	Mean	SD	Min	Max
<20*	4	4.0	1.1	2.9	5.5	1	3.6	-	-	-	0	-	-	-	-	0	-	-	-	-
20-29	31	3.8	0.8	2.2	5.3	13	4.1	1.2	3.1	7.1	6	4.1	1.2	2.0	6.4	13	4.2	1.1	1.7	6.4
30-39	25	4.2	1.0	2.7	7.4	14	4.2	1.1	3.1	6.9	9	4.3	1.4	3.1	6.5	10	4.5	1.2	2.8	6.0
40-49	21	4.9	1.0	3.7	7.6	13	5.3	1.7	3.1	8.5	5	4.7	1.2	3.4	5.7	11	5.0	1.1	3.3	6.9
50-59	9	4.3	1.3	2.5	6.1	8	4.7	1.7	2.2	8.3	4	5.1	1.0	2.3	7.2	10	5.1	1.3	3.7	7.4
60-69	4	5.1	1.2	3.4	6.2	5	5.8	2.0	4.6	6.6	4	4.6	1.4	3.8	6.3	6	6.8	2.1	5.2	9.8
70+	2	6.3	3.9	3.6	9.0	1	5.7	0.9	-	-	0	-	-	-	-	4	6.8	3.4	4.5	10.7
Total	96					55					28					54				

The mean for each different age group is the mean of the averaged flare value measured in the left and right eye of each patient.

*Patients in the youngest age category were all between 18 and 20 years of age.

SD = standard deviation of the mean flare value within each age group; min = minimum flare value measured in one of the eyes measured in a patient belonging to that particular age group; max = maximum flare value measured in one of the eyes measured in a patient belonging to that particular age group; indeterminate IBD = patients with a diagnosis of inflammatory bowel disease without a specific diagnosis at the time of measurement.

Controls were accompanying persons of patients seen in the ophthalmic outpatient clinic without a history of eye or intestinal problems.

difference in background flare between the upper and lower adjoining regions of the measurement window (less than 10% of the signal) were recorded for each patient. Disregarding the highest and the lowest values, the mean (SD) signal was taken as the final result for each eye. Flare was expressed as photon counts/ms.

Results

A total of 179 consecutive patients were included, 96 with Crohn's disease, 55 with ulcerative colitis, and 28 with inflammatory bowel disease of undetermined nature. No significant differences were observed in flare measurements between the right and left eyes of any patient, so the mean photon count of both eyes is presented and used to estimate the mean photon count for each different age category (Table 1).

In patients with Crohn's disease the mean flare value was 3.9 (SD 1.1) photons/ms in the patients younger than 30 years of age, rising to 5.3 (2.5) photons/ms in the patients over 60 years of age. Patients with ulcerative colitis or with an indeterminate type of inflammatory bowel disease showed the same pattern of results. No measurements fell outside the mean observed value plus or minus SD in the normal controls within the same age category.

The results of flare measurement in 11 patients excluded because of a positive history of previous anterior uveitis (n=2) or an (epi-)scleritis (n=9) are presented separately in Table 2, together with flare measurements of four patients with inflammatory bowel disease with clinically manifest anterior uveitis seen during the same period in the department of ophthalmology. In the four patients with clinically manifest anterior uveitis at the time of

measurement all flare values were significantly higher (mean 58 ph/ms; range 35.3-120 photons/ms).

Discussion

Contrary to the findings of Hofley *et al* and Daum *et al*, we were unable to identify a single case of subclinical uveitis among 179 adult patients with inflammatory bowel disease using the laser flare meter. All flare values observed in the patients fell within the age corrected mean (SD) flare value observed in the normal controls. There was no difference between the flare values determined in the normal population in this study and those performed by previous authors in healthy eyes.^{23 25 26}

We consider it highly unlikely that the method used was unable to detect subclinical uveitis. The laser flare photometer is capable of detecting very slight increases in aqueous humour opalescence, something which was not possible in previous studies in which a graded clinical assessment was used. Hofley *et al* used the slit lamp to detect flare in the anterior chamber in his patients. Previous studies established that clinically evident pathological flare in the anterior chamber using the slit lamp corresponds on the laser flare measurements to a minimum of 27.2 (3.0) ph/ms. In the present study not one patient was seen with a flare value of this order of magnitude. Furthermore, the same laser flare photometer correctly detected increased flare values in four patients with inflammatory bowel disease and clinically manifest anterior uveitis in accordance with published measurements.^{17 19 21 22}

We compared the patients with Crohn's disease in this study with those reported by Hofley *et al* with respect to activity of the bowel disease, colonic location of the disease process, and the use of oral corticosteroid medication at the time of the flare measurement (data not shown). There was no significant difference in either the activity (51% versus 41%, p=0.6) or the colonic involvement of the inflammatory bowel disease (64% versus 60%, p=0.7). However, there was a difference in the use of oral corticosteroid medication (25% versus 46%, p=0.05) which could camouflage an inflammation elsewhere in the body such as anterior uveitis. Nevertheless, it seems highly unlikely that this difference explains the total absence of uveitis in the present study population.

Table 2 Mean flare values in photons/ms in patients with ocular inflammatory disease

Ocular diagnosis	IBD diagnosis	No of patients	Flare (photons/ms)			
			Mean	SD	Min	Max
Previous uveitis (Epi)scleritis	Crohn's disease	2	4.1	1.0	3.1	5.1
	Crohn's disease	5	4.0	0.9	2.2	5.2
	Ulcerative colitis	3	3.7	1.1	2.7	5.1
	Indeterminate IBD	1	4.2	-	-	-
Anterior uveitis	Crohn's disease	4	58	4.3	35.3	120

IBD = inflammatory bowel disease.

In all patients with (epi)scleritis no active ocular inflammation was present at the time of flare measurement. In all patients with anterior uveitis the disease was active at the time of measurement.

The most striking difference between the two study populations is the difference in age. Hofley *et al* exclusively examined a group of juvenile patients with inflammatory bowel disease while, according to the protocol, all patients in our study were adults. It is possible that, unlike adults, juveniles may sometimes show a mitigated course of inflammatory disease because of a difference in the immune response in these autoimmune driven diseases. Another possible explanation is that juvenile patients are relatively insensitive compared with adults with respect to the discomfort of an ocular inflammation.

In conclusion, in an adult population of 179 consecutive patients (96 with Crohn's disease, 55 with ulcerative colitis, and 28 with inflammatory bowel disease of undetermined nature) all flare values measured with the laser flare meter were within normal limits. The presence of a form of subclinical uveitis in an adult population with inflammatory bowel disease, as described by Hofley *et al* in a group of juvenile patients, is highly unlikely.

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