

CLINICAL CASE OF SEVERE INTENSIFICATION OF BLOOD FLOW IN THE CONJUNCTIVA OF THE EYEBALL ONE DAY PRIOR TO THE ONSET OF INTERMEDIATE UVEITIS

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Abstract

Purpose: A clinical case is presented of posterior uveitis in a patient who received a subconjunctival injection of Kenalog. This finding was revealed during the course of a daily assessment of conjunctival microvascular hemodynamics.

Methods: Slit lamp biomicroscopy of the conjunctival microvasculature was performed before and after the emergence of intermediate uveitis in a 28-year-old man.

Result: A case of acute vision loss and the occurrence of intermediate uveitis of the right eye is described in a patient who previously received Kenalog administered subconjunctivally to treat mild anterior uveitis, which was without visual impairment. Daily monitoring of the conjunctival microvasculature revealed that the blood flow rate of the right eye considerably increased after Kenalog administration the day before patient vision deteriorated and posterior uveitis with opacity of the vitreous body occurred. The extent of the pronounced intensification of blood flow was surprising.

Conclusion: The emergence of acute intermediate uveitis following Kenalog administration was preceded by a severe increase in blood circulation in the conjunctival vessels of the eye, which decreased one day after a severe decrease in visual acuity. It is suggested that this increase in blood flow preceding pathology may be a characteristic of any inflammatory process that occurs in the human body.

Keywords: *Conjunctival microvascular hemodynamics, intermediate uveitis.*

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Introduction

It is known that the occurrence of inflammatory diseases is accompanied by a disturbance of the blood supply. Disturbances in blood circulation can occur in any situation, including in uveitis.¹

In reviewing recent data, we recalled an interesting case that we first documented 32 years ago. At that time, there were many scientific papers on the conjunctival microcirculation of the eyeball.^{2,3}

We studied the biomicroscopy of the bulbar conjunctiva in all patients with eye disorders. Additionally, we investigated blood circulation in the vessels of the conjunctiva in a young patient with acute uveitis and found an interesting phenomenon. At that time, we could not explain the phenomenon that we detected. Drawing on new data, we decided to re-evaluate this case.

Case Reports

We present the case of a 28-year-old man complaining of sudden vision loss in his left eye. Vision deterioration had occurred 10 days prior to increased blood flow. An investigation of the microcirculation in the conjunctival vessels was carried out using a slit lamp according to the modified Bloch-Dietzel technique.⁴

On ophthalmic examination, the best-corrected visual acuity (Snellen chart) was 20/20 in the right eye and 20/200 in the left eye.

Right eye: Local hyperaemia of the conjunctiva of the eyeball in the inner corner of the eye; in the pupillary area, there is only one posterior synechia. Upon dilation with mydriatics, the pupil had an irregular shape because of the synechia. Biomicroscopy of the conjunctiva showed normal blood circulation without erythrocyte aggregation.

The vitreous body was normal, and the fundus of the eye was without pathology.

Left eye: The conjunctiva and cornea were intact. Microcirculation of the conjunctiva: the blood flow rate was within normal limits. The lens was transparent. The fundus of the eye was without pathology and poorly visible due to the opacity of the vitreous.

Diagnosis: anterior uveitis of the right eye and intermediate uveitis of the left eye.

The patient was prescribed topical antibiotics, mydriatics, and corticosteroids to the left eye. At that time, parabulbar ampicillin with dexamethasone was injected daily into the left eye. A single subconjunctival Kenalog injection was made into the right eye where synechiae were present. No other drops were applied to the eye.

After 3 days, the visual acuity of the left eye increased to 20/50. The day after subconjunctival Kenalog injection into the right eye, the conjunctival hyperaemia in the inner corner of the eye disappeared. The conjunctival microcirculation of the eye was checked daily. After Kenalog injection into the right eye, a severe increase in the circulation of red blood cells in the conjunctival vessels was noted.

Erythrocyte adhesion was not observed. The day following Kenalog injection, the blood circulation in the conjunctival vessels of the right eye was surprisingly quick. This observation did not fit the diagnostic classification we had applied, and such cases may have not been observed in prior research studies. Conjunctival microcirculation of the left eye was normal. One day after Kenalog injection, the patient complained of decreased vision in the right eye. Examination revealed that visual acuity had decreased in one day to 20/200. The vitreous humor became opaque and obscured the fundus.

After that, there was a decrease in the blood flow velocity in the conjunctival vessels of the right eye in comparison with the previous day, and by the day after that, blood flow had returned to near normal velocity with insignificant adhesion of erythrocytes.

The patient received notice that a close relative had died, and he was discharged from the hospital for family reasons. Outpatient treatment was prescribed. Unfortunately, the patient did not return for a follow-up.

Discussion

We found that immediately before the onset of acute posterior uveitis, the blood flow in the conjunctival vessels of the eyeball severely increased. This increase in blood flow coincided with an intense increase in blood cell velocity. I made an association between the blood flow velocity and the word "mad".

After the onset of uveitis and vision deterioration to 20/200, the blood flow noticeably slowed the following day and became normal the day after that.

It is not known what the local hemodynamic of the microvasculature will be like a day before the onset of a sudden inflammatory disease (acute uveitis, scleritis, optic neuritis etc.).

Currently, the use of OCT angiography allows us to see disturbances in the vascular pattern in the retina. However, we did not observe the speed of blood flow the day before the onset of the disease.

This case is unique because the person was already in the hospital with a similar disease in his left eye, and his conjunctival microcirculation was being checked every day. Despite the presence of iridocyclitis, vision in the right eye was not changed, with the exception of local conjunctival hyperaemia. There were no corneal precipitates.

Therefore, a day or two before the onset of an acute inflammatory disease, blood flow in the vessels in the surrounding tissues changes. In addition, it becomes more intense and fast. Why is this happening? All we can do is speculate.

Hypothesis

Why does the microcirculation severely increase immediately before inflammation leading to the appearance of posterior uveitis?

Intensification of blood circulation is necessary for muscle cells to work, enhancing the function of organs and cell movement. Therefore, cells consume more oxygen and nutrients and generate more energy.

What will this energy be spent on? Cells either boost protein production or increase movement. The cytoskeleton plays an important role in the structure of the cell. In addition, the cytoskeleton is responsible for cell movements.⁵

However, cell movements are limited by surrounding cells. When other cells also come into motion, their spatial relationships with each other change and the fractal structure of the cell arrangement will be disturbed. This is exactly what we see in the example of vessels on AOCT in uveitis.

This also applies to vessels in uveitis. Quantitative analysis of parafoveal capillary density and morphology in uveitis demonstrates significantly lower capillary density and complexity.⁶

Apparently, after a change in the spatial orientation of the cells of the organ, a change in the spatial orientation of the vessels arises. This is the origin of the disease.

It is interesting that the use of topical corticosteroids in the form of Kenalog to the right eye caused the onset of posterior uveitis. Apparently, this finding indicates that the use of topical corticosteroids for posterior uveitis (as opposed to anterior) is a negative factor. Retrobulbar use of corticosteroids (now administered systemically, intravitreally, or suprachoroidally) can be considered as an alternative treatment.

Conclusion

The emergence of acute posterior uveitis is preceded by a significant increase in blood circulation in the conjunctival vessels of the eye, which decreases one day after a severe decrease in visual acuity. It is suggested that this may be characteristic of any inflammatory process in the human body.

Conflict of interests

The author declares that there is no conflict of interests.

Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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Study association

This study is not associated with any thesis or dissertation work.

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