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Clinical Research of Streptococcal Uveitis (Clinical Cases)

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ABSTRACT

Allergic uveitis caused by streptococci are recognized as flowing from a pesthole, the most frequent of them being considered the erythematous and the pultaceous angina. The characteristic of these angina is that they may go unnoticed, the frequency of asymptomatic forms being five times higher than those of symptomatic forms. Since the onset of angina until the early signs of ocular manifestations there is an open interval where there have been no clinical manifestations for approximately two weeks.

In the cases presented further on, the nature of streptococcal uveitis represents all immunoallergic phenomena induced by the streptococcus at the uveal level. A significant proportion of the patients presenting endogenous uveitis, despite of the classical performed treatment (non-steroidal, steroidal and immunosuppressants anti-inflammatory drugs) attain to relapsing forms (30-50%) with powerful complications that respond to late and/or inefficient treatment, managing to burn down the inflammatory phenomena, sacrificing the ocular function. The life of these patients turns out to be full of suffering, prolonged hospitalization, and some of them will count themselves among those with a visual handicap.

Keywords: uveitis, streptococcus, iridocyclitis

Introduction

In streptococcal infection, the onset of uveitis is caused, initially, by streptococcal toxins and secondary by immunoallergic phenomena. From this point of view, the uveitis of streptococcal etiology is septic uveitis, as poststreptococcal uveitis is triggered by immunoallergic mechanism. In order to be able to admit such a streptococcal etiology, one has to start from finding the sources of infection responsible for quartering these germs in the uvea or triggering some remote allergic phenomena. Researchers have found the presence of specific antibodies in the aqueous humor in hundreds of cases of endogenous uveitis, presumed as streptococcal, mentioning the lack of these germs in the uveal tract. This proves once again the allergic nature of streptococcal uveitis [1].

The presence of antistreptolysins in the body is the evidence of a streptococcal infection; when their presence is at a higher titer than the value of 250 U/ml, the streptococcal infection is possible and laboratory data should be read in conjunction with the clinic. The pathogenic mechanism of triggering uveal hypersensitivity reactions in streptococci is explained by the major role of the mucopolysaccharides on the permeability of the blood-ocular barriers as well as the uveal capillary endothelium [2]. The process of sensitizing the eye is produced by antigens circulating in the bloodstream and the eye reactivity is even greater as the uvea was previously in contact with the

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antigen. Exposing the uvea and the ocular tissues in contact with the protein antigen causes the appearance of a local reaction of plasma cells, maintained long after the antibodies have disappeared from the body. Under these circumstances, there is the subsequent need of small amounts of circulating antigen, which does not give clinical manifestations, but which causes iridocyclitis. It is possible for the eye to present a specific awareness as a result of an initial infection. The frequency of transient bacteraemia and the local susceptibility of uveal vascular bed determine the so-called "allergic diathesis" characterized by numerous recurrences of iridocyclitis.

After Woods [3], it is sufficient for these substances to leave the primary focus of infection, to reach the uvea and by means of repeated "bombings" to produce uveitis. In some cases, the clinical picture of rheumatic infection is missing and the infection cannot be evidenced but only by a high titre of antistreptolysins. Highlighting these substances shows a streptococcal infection and due to this, they present a diagnostic meaning, the antibody threshold being increased during the flare and decreased once the local restitution and general manifestations occur.

The etiologic diagnosis of streptococcal uveitis is based on two elements: evidence of prior or contemporaneous streptococcal infection and the demonstration of a general and uveal streptococcal hypersensitivity. In this allergic uveitis, cutaneous hypersensitivity tests have some diagnostic value and the therapeutic evidence of improvement or cure of the uveitis, after draining the infection outbreaks, confirms the immunoallergic etiology. The proof concerning to the role of the pathogenic streptococcus in nongranulomatous uveitis results from the clinical appearance of the disease, from the existence of a specific hypersensitivity towards the streptococcus and from the therapeutic trial. All these factors construed together and not isolated are necessary to establish the etiologic diagnosis.

From the specialty literature, it is known that streptococcal uveitis may be considered as characteristic of children and young adults, with a peak frequency in girls between 14-18 years and boys between 18-20 years, the incidence decreasing after the age of 25 years [1]. The medical pathological history is a roughly element within the etiologic diagnosis,

but useful if read in conjunction with clinical and paraclinical investigations. From the clinical point of view, the previous forms of fibrinoplastic acute iridocyclitis are prevalent and the posterior forms evolve with perivascular or panuveitis exudates which suggest but do not confirm streptococcal etiology. Within the diagnosis of streptococcal infection, the biological tests are not always significant. Determining the antistreptolysin's titer confirms the streptococcal infection, but nevertheless the ASLO titer is not directly linked to the clinical form and severity of uveitis.

Clinical case 1

Patient aged 17, hospitalized for total loss of vision of his left eye. From his pathological antecedents left tibio-tarsal arthritis is to be considered, which occurred two years ago, and repeated angina.

Eye Exam: VOD (vision of right eye) = 1 without optical correction, VOS = p.m.m. (it senses the movement of the hand) without optic correction, normal right eye.

The left eye shows intense perikeratic congestion, pigmentation powder on the back of the cornea, Descemet precipitates, turbid aqueous humor, iris with pale design, the presence of posterior iris synechiae and exudates within the pupillary field, the back of the eye does not light due to ocular surface disorders.

Otorinolaringological examination: chronic, cryptic tonsillitis, in which streptococcal viridians cultures get isolated.

Laboratory exams: the hemoleucogram shows a degree of hypochromic anemia and leukocytosis, Hb = 72% red globules = 3.870.000/mm³; white blood cells = 16.250/mm³; N = 74%; E = 1%; L = 20%; M = 5%; negative reaction to tuberculin; very high ESR: 1 hour = 27mm, 2 hours = 60mm; fibrinogen and globulins increased: fibrinogen = 11.64%, protein = 79%, albumins = 30.21%, alpha – 1 = 4.7%, alpha – 2 = 4.71%, beta = 10.6%, gamma = 17.6%. Normal

urine examination. Research on antistreptolysins shows a titer of 833 U/ml.

Figure 1 - Left eye: Posterior iris synechiae and exudates

Diagnosis: Left eye Streptococcal panuveitis

He received treatment with penicillin, 2,000,000 UI/day, local and general, atropine, dionine, local heat; local and general corticotherapy, salicylic derivatives. Tonsillectomy was performed.

Following the administered treatment, the visual disorders retrocede slowly; the exudate within the pupillary field is reabsorbed so that after 10 days of hospitalization the disorders improve on a scale of 1/3. The back of the eye appears slightly veiled due to the great number of exudative floaters within the vitreous. After one month of the occurrence of the first ocular inflammatory phenomena, the eye becomes painful again, the exudate from the pupillary field reappears, the vitreous floaters emphasize and the eyeball is hypotonic. The patient presents rhinitis concomitant with acute pharyngitis and an acute rheumatic spurt of fever 38°C, joint pain, joint swelling. Erythrocyte sedimentation rate is maintained high at 55 mm/hour, 77 mm/2 hours; maintaining anemia; decrease in leucocytes to 9000 with eosinophilia and lymphocytosis (N = 53%, E = 6%, L = 34%, M = 7%). The same general and local treatment is to be continued and subsequently, the ocular phenomena retrocede slowly, concomitant with the joint ones, the eyesight improves to 1/4, but large floaters persist within the vitreous.

Reviewed after one year, the eyesight of the left eye is noted for 1/2 with posterior cortical crystalline disorders such as choroidal cataract and exudative remains within the macular region.

Clinical case 2

Patient aged 19, hospitalized for decreasing eyesight in the right eye, tearing and emphasized photophobia. From her medical history, tonsillectomy is to be noted.

Eye exam: VOD (vision of right eye) = 1/6 without optical correction (does not correct), VOS (vision of left eye) = 1 without optical correction; right eye accentuated perikeratic congestion accompanied by bulbar conjunctival chemosis, exudates in the anterior and posterior chamber, positive Tyndall, precipitates on the back of the cornea, anterior vitreous opacity, discrete posterior synechiae, sluggish pupillary reflexes.

Ophthalmoscopy of right and left eye: plane papillae, normal coloured, retinal vessels with normal aspect; macula with macular and perimacular edema, with pigmented and non-pigmented areas, radial retinal folds within the oedematous area.

Paraclinical exams:

ESR = 40 mm/hour; ASLO = 1250 U; fibrinogen = 200 mg%, positive reactive protein C, the pharyngeal exudate reveals the presence of *Candida albicans* and white beta haemolytic *Staphylococcus* as well as the examination of conjunctival secretion. Immunogramme: IgM = 110 UI/ml, IgG = 136 UI/ml, IgA = 88 UI/ml.

Diagnosis: Right eye Streptococcal cyclitis

It is established intensive treatment with antibiotics (penicillin 600.000U at an interval of 8 hours in the acute period, for 10 days, then Moldamin weekly, subsequently at 2-4 weeks depending on laboratory tests), anti-inflammatory, antihistamine and vascular trophics and the secondary prophylaxis with Moldamin is continued. Healing occurs after antibiotic treatment.

Clinical case 3

Patient aged 19, hospitalized for decreased eyesight in the left eye and accentuated photophobia in order to get specialized investigations and to establish an appropriate therapeutic line.

Eye exam: VOD (vision of right eye) = 1 without optical correction, VOS (vision of left eye) = 1/6 without optical correction (does not correct); TOD (ocular pressure of right eye) = 19 mmHg, TOS (ocular pressure of left eye) = 21 mmHg; Left eye mixed conjunctival hyperemia with perikeratic congestion; large episcleral vessels, dilated; corneal endothelial edema, fine endothelial punctiform precipitates; positive Tyndall; iris presenting cryptic blurred design with a tendency of synechiae formation in the lower half; distorted pupil; the existence of a fibrin membrane within the pupillary field, pupillary seclusion.

Paraclinical exams:

ESR = 33 mm/hour; ASLO = 621 U; fibrinogen = 230 mg%; PCR = negative

Diagnosis: Left eye. Poststreptococcal fibrinoplastic iridocyclitis

Healing after 19 days of general treatment with penicillin 1 million UI at every 6 hours for 10 days, followed by benzatinpenicillin 600.000 UI/weekly; local treatment with antibiotics, anti-inflammatory, mydriatics and prophylactic Moldamin was associated.

Clinical case 4

Patient aged 14, has shown for about a week red right eye, pain and photophobia, reason for hospitalization in order to establish the diagnosis and the specialized treatment.

Eye exam: VOD (vision of right eye) = 2/3 without optical correction (does not correct), VOS = 1 without optical correction; TOD (ocular pressure

of right eye) = 20 mmHg; TOS (ocular pressure of left eye) = 17 mmHg; Right eye subconjunctival haemorrhage, moderate perikeratic congestion; discrete endothelial edema, precipitates within the lower half of the cornea; average depth within the anterior chamber, positive Tyndall; presence of iris synechiae, absent pupillary reaction; blurred vitreous with floating filaments.

Ophthalmoscopy of right eye: intermaculopapilar atrophic focal point with a papillary diameter of $\frac{1}{2}$, with old pigmented mobilizations, macular edema and recent perimacular.

Paraclinical exams:

ESR = 40 mm/hour; ASLO = 1250 U; fibrinogen = 200 mg%; reaction to negative tuberculin.

Pharyngeal exudate: saprophytic flora, absent Candida

Sinuses radiography: discrete maxillary mucosa thickening of the right maxillary sinus, as well as thickening of the right frontal sinus mucosa

Otorinolaringological examination: Hypertrophic chronic tonsillitis

Diagnosis: Right eye recurrent streptococcal uveitis.

Figure 2 - Left eye: Poststreptococcal fibrinoplastic iridocyclitis: pupillary seclusion; perikeratic congestion; posterior iris synechiae.

Healing after local and general antibiotic treatment (penicillin 800.000U at every 8 hours for 10 days followed by Moldamin weekly, then after 4 weeks, with the role of maintaining a longer penicillemia level that can prevent a re-infection) associated with anti-inflammatory, mydriatics. The local treatment consisted of warm compresses around the neck, gargles with disinfectants, and rest in bed that favors healing and more liquid diet for kidney protection.

Discussions

The haemolytic streptococcus, recognized as a pathogen agent in many diseases which affected the focal point, could be revealed simultaneously in tonsils too. The theories developed until now, which have as main purpose the explanation of the etiopathogenesis of focal point diseases, generally refer to how microbes and their products reach and act on body tissues. It should also be emphasized the fact that, in the production of rheumatism, beside the beta haemolytic streptococcus group A, the palatine tonsil plays an important role, both as a shelter of a microbial flora as well as gateway. Under physiological conditions, the tonsil may play the role of a barrier as well as the one of a gate in pathological conditions. It is considered that focal point chronic tonsillitis should not be characterized by the clinical picture of chronic tonsillitis, but primarily by permeability of the tonsil barrier, so by turning the tonsil into a gate for microbes [4]. The haemolytic streptococcus with a decisive role in generating focal point diseases is very sensitive to penicillin, so that many focal point diseases can be favourably influenced, from a therapeutic point of view, by penicillin therapy as well as by a corticosteroids one. However, the tonsil focal point inactivated by these treatments, in a sensitized body, carries a high risk of recurrence; its evolution is usually more serious and the treatment allows more modest therapeutic results than in the case of original illness.

The palatine tonsil begins to grow more intense after birth, when, following the microbial invasion secondary lymph follicles, crypts and the reticular system appear and grow in number. Lymph cells are produced in tonsils and secondary lymph follicles represent the immunobiological activity centers, centers which appear, grow and react under the action of microbial infections or of their toxins. It is widespread the conception that up to a certain age tonsils are useful to the body but after a certain age, they lose their activity of defense and become harmful, turning into outbreaks of infection [5].

Removal of hypertrophied tonsils, which occur as physiological reaction in response to repeated infections, is indicated especially in young children. In these cases, it is usually not about a chronic inflammation but about a functional hypertrophy appeared as a result of tonsil overloading. Tonsils with excessive size can hinder breathing, phonation and, rarely, swallowing, but they can hamper, by compression even the permeability of the Eustachian tube, causing otitis and their chronicization [6].

It should be also emphasized that focal point diseases (rheumatic disease, iridocyclitis and erythema nodosum) occur primarily in children and in younger-aged people and less in the elderly, which seems to indicate that the two activities, the defense and the focal point one act at the same age. In conclusion, each tonsil is simultaneously both an outbreak of infection, often inactive and latent, as well as a defense organ.

It is pointed out the fact that a cold, a somatic exhaustion, can suddenly transform an apparently normal tonsil into a harmful active infection outbreak; therefore it is advocated the fact that cryptic system tonsils (the palatine and the pharynx ones) get sick most often, the local inflammatory processes can permeabilize the tonsil barrier, fact proven by the general symptoms of the angina (fever, malaise, leukocytosis, elevated ESR) and the tonsil can open wide gates to the cryptic microbial flora being convincingly demonstrated by the presence of peritonsillar phlegmons in some cases.

Conclusions

In streptococcal infection, the onset of uveitis is initially caused by streptococcal toxins and secondary by immunoallergic phenomena, so that, from this point of view, the uveitis of streptococcal etiology are septic uveitis, as poststreptococcal uveitis are triggered by an immunoallergic mechanism.

The etiologic diagnosis of streptococcal uveitis is based on two elements: evidence of prior or contemporaneous streptococcal infection and demonstration of a general and uveal streptococcal hypersensitivity.

The treatment was etiological, with general administered penicillin, and in severe forms of panuveitis, the administration was IV in a dose of 10-12 million U/day. The secondary prophylaxis was performed by administering retard penicillin 600000-1200000 U/day based on biological parameters for 5 years. A significant proportion of patients with endogenous uveitis, despite the classical performed treatment (non-steroidal, steroidal and immunosuppressants anti-inflammatory) attain to relapsing forms with powerful complications that respond to late and / or inefficient treatment, managing to burn down the inflammatory phenomena, sacrificing the ocular function.

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