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Research Article

Complications of Cytomegalovirus Uveitis with HIV Infection

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Received: November 28, 2019; **Published:** December 24, 2019

Abstract

Cytomegalovirus contamination is very common in the population. This often occurs in HIV-infected patients. Purpose of the research is to define the composition of complications and requirement for microsurgical treatment. The results of a pilot study are presented. A quarter of patients with CMV-uveitis and HIV-infection need in surgical treatment.

Keywords: *Cytomegalovirus Uveitis; Human Immunodeficiency Virus (HIV); HIV-Infection*

Introduction

HIV-infection is controlled chronic disease. Quantity of HIV-infected patients is increased in Russia and St.-Petersburg every day [1-4]. There are 58233 cases of HIV-infection in St.-Petersburg since the beginning of the epidemic.

Cytomegalovirus (CMV) uveitis is the most common eye disease associated with HIV and severe immunodeficiency. Etiotropic treatment can help with acute illness, keep vision function. But patients apply to the ophthalmologist with complaints after that (decrease in visual acuity, seeing through a mist, pain and other). It can be arisen from the complications of the CMV-uveitis.

Purpose of the Study

Purpose of the research is to define the composition of complications and requirement for microsurgical treatment.

Materials and Methods

This pilot research was conducted at the Saint-Petersburg Center for Control of AIDS and Infectious Diseases and Department of Ophthalmology in North-Western State Medical University named after I.I.Mechnikov.

Study group include 20 patients seeking ophthalmological care in 2019 year in Sankt-Petersburg AIDS Center. All of them were HIV-infected patients (had positive immune blotting reaction), got highly active antiretroviral therapy (HAART). They passed routine standard ophthalmological examination (visual acuity testing, biomicroscopy, biomicroophthalmoscopy, perimetry). It was analysed CD4-lymphocytes, HIV RNA and CMV DNA levels in blood retrospectively.

Diagnosis CMV-uveitis was established with an appropriate fundus changes and positive polymerase chain reaction for finding DNA of cytomegalovirus in blood.

Results

Epidemiological data

Average age is 40.5 years (median - 42 ETFs, 95% confidence interval - 37.0 - 50.3). It corresponds to average age of patients observed in SPb AIDS Center. There were 10 men and 10 women (1:1). All of them had 4b-4c stage of HIV-infection (Pokrovsky classification) [4]. Transmission path was heterosexual predominantly.

Laboratory tests

It`s known that initiation risk of CMV-uveitis is increased with the decrease in the number of CD4-lymphocytes below 50 cell/μl [6-8]. Quantity CD4-lymphocytes ranged from 5 to 203 cell/μl in our study (average - 50.8 ± 12.2), but as s percentage remained low - no more than 7%.

Number HIV RNA was 5.64 ± 5.29 lg cop/10^5 cells, CMV DNA - 2.42 ± 0.58 lg cop/10^5 cells.

Ophthalmological manifestations

11 patients had bilateral CMV-uveitis (31 eyes) 45% cases - unilateral (9 people). Average visual acuity was 0.624 ± 0.064 in beginning, 0.311 ± 0.059 after treatment. It was has arisen reliably for several reasons: complications and incomplete data. It`s impossible evaluate clinical characteristics by some patients on start because they got treatment in other region of Russia.

Visual acuity was 0.1 and below in 10 cases (12 eyes, 38.7%). 5 patients were blinded for 1 eye (25%, 5 eyes). It`s important to note that extremely low visual function remained in more than a quarter of cases. Such outcomes significantly reduce the life quality of people living with HIV, limit their work, lead to profession change and difficulties of socialization. For example, vision acuity by patient O. was 0 (zero) right eye and 0.02 - left eye.

19 patients (95%) have constriction vision field to different degrees. In other words, it was almost by all patients with the exception of people, who had cotton exudates on the fundus.

Complication of CMV-uveitis were: vitritis, optic nerve atrophy (fractional or total), complicated cataract, strabismus, cystic macular edema, retinal detachment.

	Vitritis	Optic nerve atrophy	Cataract	Retinal detachment	Cystic macular edema	Strabis-mus	Secondary cataract
Number person (%)	10 (50%)	9 (45%)	14 (70%)	6 (20%)	4 (20%)	8 (40%)	3 (15%)
Number eyes (%)	13 (42%)	11 (35,5%)	19 (61,3%)	7 (22,6%)	5 (16%)	8 (25,6%)	3 (9,7%)

Table 1: *Composition of complications CMV-uveitis.*

Complicated cataract is most frequent complication after acute period despite treatment performed. Its degree depend on duration of CMV-uveitis before treatment, damage area on the fundus and rate of immune reconstitution after HAART start. There are requirement of surgeon in some cases. Cataract extraction was made by 5 people, in 4 cases with IOL implantation. Operation performed twice on urgent indication (swelling cataract). Actually, more patients need cataract extraction. They will get this care in the near month.

Retinal detachment arisen in acute period and later, sometimes after the end of etiotropic therapy.

When CMV-retinitis was fulminant, it was diagnosed by first visit to ophthalmologist.

Surgical cure of retinal detachment isn`t realized into practice very often in these cases because of difficulty main disease and high risk of infectious complications. As a result, people lose possibility to reconstruct vision function and lose possibility to see by bilateral damage, become invalids.

When detachment is arisen later, operation is performed in most cases. But there isn`t united opinion about opportunity and time for necessary care. Infectious eye damage in the past is reason sometimes for refusal in surgical treatment in ophthalmological department despite on successful HAART.

Conclusion

In all a quarter of patients with CMV-uveitis need in surgical treatment. This quality may be more if medical care will be provided in acute period. Patients with HIV-infection and CMV-uveitis need long observation by an ophthalmologist because of high risk complication in distant period.

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Volume 11 Issue 1 January 2020