“Eyecrol” in Treatment of Allergic Conjunctivitis in Oil and Gas Facility Workmen and Residents of the Region

The study demonstrated high therapeutic efficacy of “Eyecrol” medication in therapy of chronic noninfectious and allergic conjunctivitis in oil and gas facility workmen and residents of the region. The conjunctiva allergic reaction relief was reported in the patients regardless of the disease severity. Treatment with “Eyecrol” demonstrated no side effects contrary to corticosteroid-containing medications causing long-term intraocular pressure increase and progression of other ophthalmopathies.

Keywords: Allergic disorders, conjunctivitis, eye drops, IgE

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Introduction

Due to increase in their proportion in ocular morbidity, unfriendly environment and a human organism’s immune response allergic disorders of eyes comprise a significant problem in modern ophthalmology. Allergic reactions are consequent to exogenous and endogenous factors. In the world literature allergy is defined as a pathological process associated with interplay of exogenous or endogenous factors with antigen reactive antibodies or lymphocytes. Combination of these two components is rather frequent, though one of them apparently predominates. A dramatic increase in diversity of chemical agents, including not natural ones, causing an organism’s response in the form of an allergic reaction is a typical feature of our time.

Acute allergic reaction is a first-type reaction with characteristic classic effects mediated by immunoglobulins E fixed on the surface of mast cells (MC) and basophiles, releasing vasoactive amines and various chemotactic factors when contacting with allergens. MC function is associated with the release of mediators, such as, histamine and heparin into the environment. Being released the mediators produce some pharmacologic effects preconditioning inflammatory reaction of a conjunctiva. Mast cells are known to take part in the allergic reaction of antigen-antibody complex and to play a role in type IV hypersensitivity, often called delayed hypersensitivity (Pytskiy, Adrianova and Artomasova, 1991). MC could be seen in all ocular tissues, excluding unaffected cornea, lens, ophthalmic nerve and retina. They increase in number in the allergen-challenged conjunctiva and eye lids, upon keratitis, uveitis, orbital inflammation and some orbital or ocular tumors. Hystochemical studies on specific MC granules showed that they consist of heparin complex with histamine, small amounts of hyaluronic acid and other glycosaminoglycans electrostatically attached to the former.

Medications producing stabilizing effect on MC or protecting from MC mediators are thought to be the most valuable in therapy of ocular allergic diseases (Nizami, 1981). “Eyecrol”, eye drops, preventing degranulation and release of histamine and biochemical mediators of inflammation, are among those worth mentioning. Our work was initiated to study clinical effect of “Eyecrol” in therapy of allergic conjunctivitis in oil and gas facility workmen and residents of the region. All participants gave the informed consent to take part in the study.
Materials and methods

We used eye drops “Eyecrol” (World Medicine) produced in the form of transparent colorless aqueous solution of sodium cromoglicate (m/v 4%-10.0) in therapy of 77 patients (145 eyes). The outcomes of therapy were compared with those obtained upon treatment of 33 patients (65 eyes), included into the control group, with of “Oftadec” eye drops (0.1% solution) (Ukraine) for exacerbation of chronic allergic conjunctivitis (vernal keratoconjunctivitis, gigantic papillary and papillary conjunctivitis). In this group duration of therapy with “Oftadec” in the dose of 2 drops thrice a day was not more than 7 days. Mean age of patients in both groups was 59.0 ± 0.5 years. The disease duration in patients receiving “Eyecrol” varied from 6 months to 6 years (3 years in the average), seasonal recurrences being registered in 47 patients (87.01%) mainly during a spring-summer period. 30 patients (12.99%) had food allergies. Of 77 examinees conjunctivitis was concurrent to giant edema (Photo 1 and 2) in 25 (32.47%). Exematous keratoconjunctivitis was found in 17 patients (22.08%), 19 (24.67%) having chronic allergic rhinitis with transient nasolacrimal duct obstruction due to allergic edema. Eyelid atopic dermatitis was registered in 9 (11.69%), chronic gastrointestinal disorders, such as, gastritis and cholecystitis concurrent to ocular pemphigoid being observed in 7 (9.0%).

PHOTO 1. PRETREATMENT

PHOTO 2. AFTER TREATMENT
All patients underwent standard ophthalmological examination including tonometry, perimetry, biomicroscopy and gonioscopy; washing-out of nasolacrimal duct being performed to assess its patency. Bacteriological, immunological and blood laboratory investigation with microcopy were conducted too. The patients presented with pruritis, erythema, edema, lacrimation, photophobia, eyewinker and burning sensation in the eye as functional signs and symptoms according to significance to the patients. Hyperemia of conjunctiva with various degrees of intensity was found in all patients; 52 examinees had chemosis and eye lid skin edema (Photo 3), hypertrophy of conjunctival follicles being found in 25 eyes.

**PHOTO 3. EYE LID SKIN EDEMA**

According to severity and intensity of ophthalmological symptoms, defined as mild, moderate and high, the patients were divided into three groups. Thus, 1st, 2nd and 3rd groups comprised 23 (29.87%), 37 (48.05%) and (17 (22.08%) patients, respectively. Medical history of 27 examinees (35.06%) showed prescription of biopharmaceuticals, which are known to affect endocrine system, cause ocular hypertension and result in steroid glaucoma. To detect the disorder the patients were subjected to tonometry, perimetry and gonioscopy. No changes typical of steroid glaucoma were registered. The patients had no signs of bacterial and viral infections either; microscopic examination of eyelashes showed no presence of *Demodex* mites. The above signs allowed diagnosing chronic allergic, but not infectious conjunctivitis on the stage of exacerbation in all the examinees. “Eyecrol” drops were prescribed to be instilled in the dose of 2 drops thrice a day for a week. Pronounced meibomitis was the indication for prescription of a three times a week UHF therapy following massage of eye lids. After amelioration of conjunctivitis exacerbation signs in all patients the number of instillations was reduced to 2 times a day for 28 days.

**Results and discussion**

Efficacy of treatment of patients with the exacerbated chronic non-infectious allergic conjunctivitis by severity of ophthalmological symptoms varied. Positive effect of “Eyecrol” in relieving the disease exacerbation was registered in all examinees. The medication was found to reduce lacrimation, pruritis, conjunctiva hyperemia, photophobia and winker sensation in the eyes. Eyelid margin biomicroscopy demonstrated regression of meibomitis signs as well as disappearance of chemosis of bulbar conjunctiva and *fornix*
conjunctiva inferior. In 60 patients (77.92%) signs of the diseases were found completely disappeared, stable remission being observed within an 8-day period. The largest portion of the remitted patients was observed in the first group (29.87%, n=23). Patients comprising the second group reported positive effect of “Eyecrol” as well, though conjunctiva hyperemia persisted within all period of study. The same phenomenon was found in the third group of patients (22.08%, n=17).

28-day course of therapy with “Eyecrol” medication demonstrated no side effects. It is highly efficient for therapy of conjunctiva allergic diseases with frequent recurrences regardless of severity and clinical forms. The medication antagonizes histamine due to stabilizing effect on appropriate mediators. As the result, number of eosinophils in blood and lacrimal fluid is found reduced, serum IgE being found decreasing as well (Table 1).

**Table 1. Comparison of Eosinophils and IgE in Blood and Lacrimal Fluid After Therapy with “Eyecrol” and “Oftadec” Eye Drops in Oil and Gas Facility Workmen and Residents of the Region**

<table>
<thead>
<tr>
<th>Type of medication</th>
<th>Eosinophils (%)</th>
<th>IgE (IU/ml)</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>In lacrimal fluid</td>
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<td>I</td>
</tr>
<tr>
<td>“Eyecrol”</td>
<td>8.5±0.8</td>
<td>3.1±0.4*</td>
</tr>
<tr>
<td>“Oftadec”</td>
<td>9.6±0.6</td>
<td>7.1±0.4</td>
</tr>
<tr>
<td>Normal limits</td>
<td>2.5±0.5</td>
<td>4.5±0.5</td>
</tr>
</tbody>
</table>

Note: P<0.05 in relation to the control group

A 7-day course of therapy with “Eyecrol” medication in the dose of 2 drops thrice a day helps relieve clinical picture of the disease. Stable remission with confident reduction of eosinophils in blood and lacrimal fluid as well as serum IgE decrease has been found attained in the course of 28-day therapy. The repeated examination of the patients in 6 months demonstrated complete normalization of the parameters to be the evidence for stabilization of the process, low proportion of recurrences present.

**Conclusion**

The study demonstrated high therapeutic efficacy of “Eyecrol” medication in therapy of chronic noninfectious and allergic conjunctivitis. The conjunctiva allergic reaction relief was reported in patients regardless of the disease severity. It should be noted that the most pronounced therapeutic effect was observed in patients with mild and moderate severity of allergic conjunctivitis, the most severe one requiring prolonged treatment and additional administration of general anti-allergic medications. To achieve stable remission and restoration of the organism’s immune balance administration of the medication after acute conjunctiva inflammation relief in the dose of 2 drops thrice a day for 7 days should be followed by further maintaining treatment in the dose of 2 drops tid for 28 days. Contrary to corticosteroid-containing medications causing long-term intraocular pressure increase and progression of other ophthalmopathies, treatment with “Eyecrol” demonstrated no side effects. Pharmacological parameters indicate pathogenetic substantiation and safety of “Eyecrol” medication.

**References**
