

# Model of Immunogenic Uveitis in Rabbits

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Six models of experimental immunogenic uveitis induced by injection of normal horse serum were tried in rabbits. A convenient working variant of the model was developed characterized by high activity and long duration of the inflammatory process in the eye. Creation of this model requires pre-sensitization (subcutaneous injection of 5 ml normal horse serum) followed by intravitreal injection of the resolving dose of horse serum on day 9. An adapted improved model of experimental immunogenic uveitis in rabbits is proposed.

**Key Words:** *immunogenic uveitis; model; rabbits*

Simulation of immunogenic uveitis in rabbits was described not once in Russian and foreign papers. The models differ by the method of sensitization, routes and terms of administration of the resolving dose of preparations, activity and duration of inflammatory process in the eye.

We tried 6 models of immunogenic uveitis in rabbits and selected a working variant of the model characterized by maximum activity and longest duration of the inflammatory process.

## MATERIALS AND METHODS

The study was carried out on 24 Chinchilla rabbits (48 eyes) weighing 2.0-2.5 kg. Six models of immunogenic uveitis were studied. The models were created using normal horse serum for culturing mycoplasma in nutrient media.

The animals were divided into 6 groups, 4 rabbits (8 eyes) per group.

During intravitreal injection of the resolving dose of the serum the rabbits were under local anesthesia (1% dicaine solution). The syringe with the serum was held perpendicularly, the needle was injected at a distance of 1.5-2.0 mm from the limbus.

Animals of groups 1 and 2 were intravenously injected with 5 and 10 ml normal horse serum, respectively, and on day 14 with 0.1 ml resolving dose intravitreally.

Rabbits of groups 3 and 4 were subcutaneously injected with 5 and 10 ml normal horse serum, respectively, and on day 9 with 0.1 ml resolving dose intravitreally.

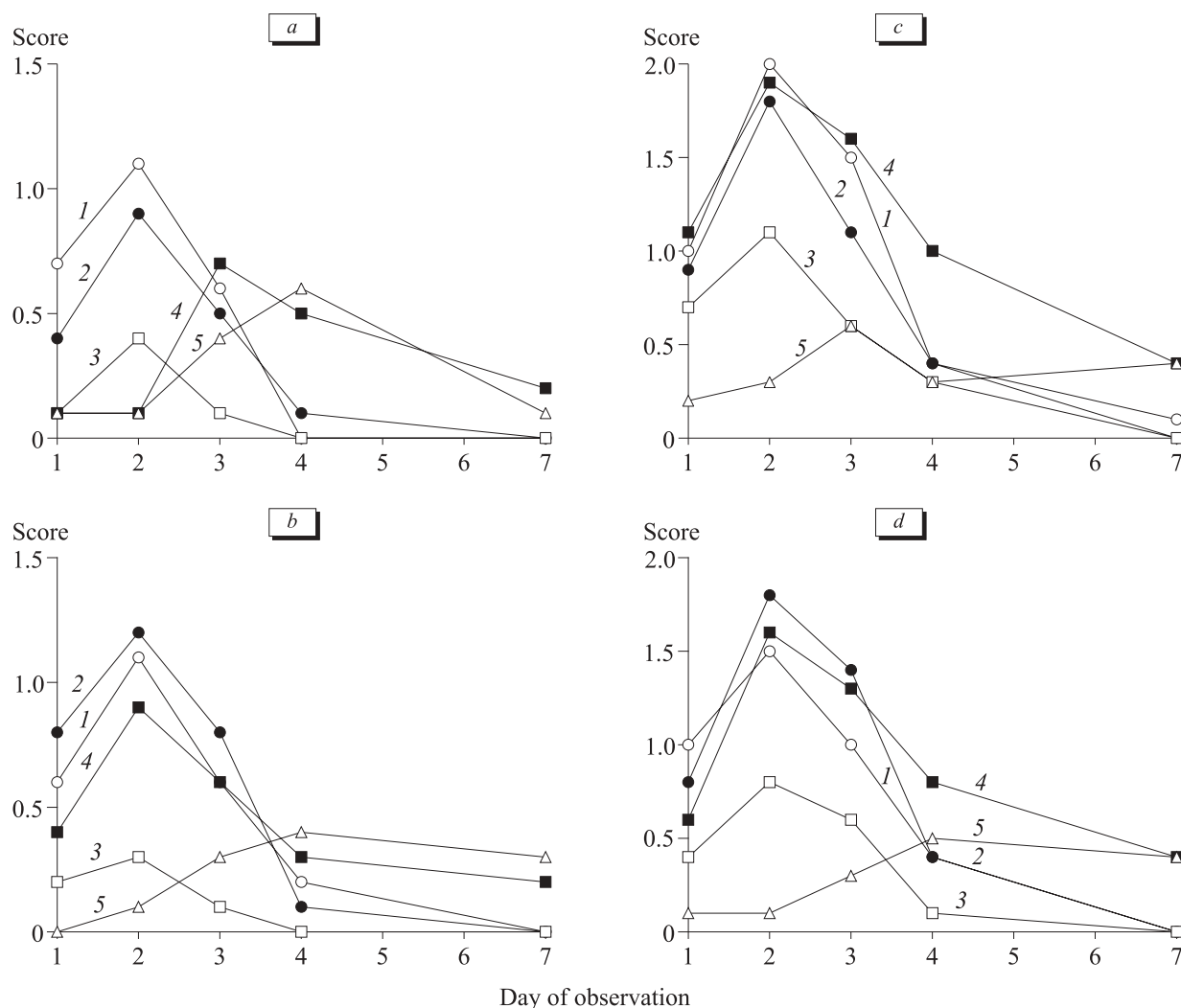
Group 5 rabbits received 10 ml horse serum intravenously and on day 9 0.1 ml resolving dose of the serum intravitreally.

Group 6 animals were intravitreally injected with 0.1 ml resolving dose of horse serum without preliminary sensitization.

The course of inflammatory process in the eyes was evaluated on days 1, 2, 3, 5, 7 after injection of the resolving dose by evaluating 12 parameters: edema of the eyelids, injection of the conjunctiva, corneal edema, precipitation on the endothelium, exudation in the anterior chamber (fibrin and hypopyon), iridal hyperemia and edema, formation of posterior synechias, lenticular opalescence and precipitation on the lens, exudation into the vitreal body, intraocular pressure. Biomicroscopy, ophthalmoscopy, and tonometry were used. Photoregistration of the inflammatory process in the rabbit eyes was carried out during the same periods.

Tonometry was carried out using 10-g Maklakov's load after instillation of 1% dicaine solution into the examined eye. The results were evaluated using Nesterov's ruler.

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**Fig. 1.** Time course of inflammatory process in the eyes of rabbits with immunogenic uveitis induced by injections of equine serum in doses of 5 (a, c) and 10 ml (b, d). a-b) intravenous injection of horse serum; c-d) subcutaneous injection of the preparation. 1) corneal edema; 2) precipitation on the endothelium; 3) hypopyon; 4) precipitation on the lens; 5) pigmentation of precipitation.

## RESULTS

In groups 1-4, the maximum manifestation of inflammation (conjunctival hyperemia, corneal edema, precipitation on the corneal endothelium and lens, hypopyon, etc.) was observed on day 2 after intravitreal injection of the resolving dose of the serum (Fig. 1). No uveitis developed in groups 5 and 6. Simulation of immunogenic uveitis in groups 1 and 2 required a longer period for sensitization, which increased the duration of the experiment.

The dose-dependent effect between the parameters in rabbits of groups 1 and 2 and in groups 3 and 4 was weak, that is, activity of the inflammatory process virtually did not depend on the dose of serum injected for sensitization.

In groups 3 and 4, in which the animals were subcutaneously injected with normal horse serum,

the clinical picture was more pronounced and the duration of immunogenic uveitis (inflammatory process) was 2 days longer.

Hence, we propose an adapted and improved model of experimental immunogenic uveitis in rabbits consisting in subcutaneous injection of 5 ml normal horse serum followed by intravitreal injection of 0.1 ml of the resolving dose of the preparation on day 9.

## REFERENCES

1. A. I. Shchipanova and D. Yu. Maichuk, *Immunologiya*, No. 2, 45-47 (1998).
2. H. A. Baldwin and A. R. Borgman, *Proc. Soc. Exp. Biol. Med.*, **133**, 1326-1330 (1970).
3. B. Foss, *Experimental Anaphylactic Iridocyclitis* (1949), P. 65.
4. H. D. Grand, B. Schimmelpfenning, and R. Witmer, *Ophthalm. Res.*, **5**, 204-214 (1973).