achieving control over retinoblastoma cells floating within the vitreous cavity in advanced retinoblastoma of grade C, D and E. Periocular and intravitreal drug injection is a promissing route for maximum bioavailability to the vitreous but it requires a well defined dose for achieving tumor control while limited toxicity to the ocular structures.
Objective: 1. Experimentally evaluate local ocular toxicity of carboplatin and topotecan on the model of rabbit eye after periocular and intravitreal administration. 2. To evaluate the clinival applicability of the new method of intravitreal application of chemotherapeutics using transcorneal approach.
Material and methods: In vivo experiment was conducted on the model of 54 New Zealand White rabbits, which were dividend into groups of six rabbits according to protocol. Only right eyes were applicated and received: 1. periocular carboplatin at a dose of 15 mg and 30 mg and periocular topotecan at a dose of 2 mg, 2. intravitreal carboplatin at a dose od 0,05 mg a 0,008 mg and intravitreal topotecan at a dose of 1 μg a 2 μg. Left eyes received the same amount of saline. Concentrations of carboplatin in the vitreous humor and plasma were determined by atomic absorption analysis, topotecan concentrations by high performance liquid chromatography and concentrations of metallothionein by adsorptive transfer technique with differential pulse voltammetry coupled with Brdicka reaction. We observed clinical and histopathological manifestations of chepotherapeutic toxicity that was divided into four stages according to the severity of damage of rabbit eye. Retinal function was evaluated by electroretinographic examination (ERG).
Results: In our experiment, all tested doses after transcorneal intravitreal administration achieved higher vitreous levels of carboplatin and topotecan than after periocular administration. We observed eyelid necrosis after 30 mg of periocular carboplatin injection.