Effect of squalamine on iris neovascularization in monkeys

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Abstract:
Purpose: To investigate the effect of squalamine, an antiangiogenic aminosterol, in an experimental model of iris neovascularization. Methods: Iris neovascularization was created in cynomolgus monkeys by occluding retinal veins with an argon laser and inducing persistent hypotony with a central corneal suture. Twenty-four eyes were treated in three groups. In Group 1, four eyes were injected intravitreally with 3 μg/0.1 mL squalamine and four eyes with balanced saline solution (controls) immediately after vein occlusion (day 1); injections were repeated every 3 days for 3 weeks. In Group 2, 1 mg/kg squalamine was administered with intravenous infusion in dextrose 5% in four animals; four control animals received only dextrose. Infusions began on day 1 and were repeated every 3 days for 3 weeks. In Group 3, after development of iris neovascularization on day 7, 1 mg/kg squalamine was injected systemically in four animals; four control animals received dextrose 5%. Monkeys were examined by slit-lamp biomicroscopy and underwent color photography and fluorescein angiography. Results: Group 1: All eyes, treated and control,
developed intense and persistent rubeosis iridis. Group 2: Two of the four treated eyes in this group developed minimal iris neovascularization; the other two had no iris neovascularization. All four control eyes developed intense, persistent iris neovascularization. Group 3: All eyes developed extensive rubeosis iridis; iris neovascularization regressed in all four treated eyes after squalamine injections. Two of four treated eyes retained minimal iris neovascularization; two showed complete regression of rubeosis iridis. Rubeosis iridis completely regressed in two of the four control eyes; the remaining two control eyes had intense, persistent iris neovascularization. Conclusions: Intravitreally injected squalamine did not affect the development of iris neovascularization; however, systemic squalamine injection inhibited the development of iris neovascularization and caused partial regression of new vessels in a primate model.