Episcleral Venous Pressure Responses to Topical Nitroprusside and N-Nitro-L-arginine Methyl Ester.

Zamora DO, Kiel JW.

Department of Ophthalmology, University of Texas Health Science Center, San Antonio, Texas.

PURPOSE: To determine the episcleral venous pressure (EVP) responses to nitroprusside (NP) and l-NAME. Methods. In anesthetized rabbits (n = 36), arterial pressure and IOP were measured by direct cannulation, and carotid blood flow and heart rate were measured with an ultrasound flowmeter and cardiotachometer. EVP was measured in two groups with a servonull system. Group 1 (n = 13) was given NP (50 μL, 10 mg/mL). Group 2 (n = 10) was given l-NAME (100 μL, 10 mg/mL) followed by NP (50 μL, 10 mg/mL). In group 3 (n = 13), fluorophotometric aqueous flow was measured before and after NP (100 μL, 10 mg/mL).

RESULTS: Systemic parameters were unaffected by treatment in all groups. In group 1, NP increased EVP from 9.1 +/- 0.6 to 11.6 +/- 0.8 mm Hg (P < 0.01) and IOP from 18.7 +/- 1.4 to 23.9 +/- 1.6 mm Hg (P < 0.01). In group 2, l-NAME lowered EVP from 11.5 +/- 1.2 to 8.8 +/- 1.0 mm Hg (P < 0.01) and subsequent NP increased EVP to 13.9 +/- 1.7 mm Hg (P < 0.01 versus l-NAME and baseline). l-NAME decreased IOP from 20.8 +/- 1.7 to 16.7 +/- 1.8 mm Hg (P < 0.01), and then it increased to 20.7 +/- 1.3 mm Hg after NP (P < 0.01 versus l-NAME and P > 0.05 versus baseline). In group 3, NP increased IOP from 16.6 +/- 0.7 to 20.0 +/- 0.9 mm Hg (P < 0.01) but did not alter aqueous flow (2.65 +/- 0.3 vs. 3.0 +/- 0.3 μL/min, P > 0.05)

CONCLUSIONS: Because a topical NO donor raises EVP and a topical NO synthase inhibitor lowers EVP, the authors conclude that EVP is modulated by NO.

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