Effect of Early Normotension with Olmesartan on Rho-kinase Activity in Hypertensive Patients

Claudio Cantin, Jorge E. Jalil *, Juan F. Bulnes, Ulises Novoa, Paul MacNab, Iván Godoy, Samuel Córdova, Luigi Gabrielli y María Paz Ocaranza, “Effect of Early Normotension with Olmesartan on Rho-kinase Activity in Hypertensive Patients”, Farmacología vascular actual (2020) 18: 87. https://doi.org/10.2174/1570161117666190121103116

Abstract:

Background: Angiotensin II is a potent activator of the Rho-kinase (ROCK) pathway, through which it exerts some of its adverse vasoconstrictor effects. Clinical evidence on the effects of blocking the angiotensin II receptor 1 on ROCK activity in hypertensive patients is scarce.

Objective: To demonstrate that ROCK activity in peripheral blood mononuclear cells (PMBCs) in patients with essential hypertension is reduced earlier than previously observed, along with blood pressure (BP) lowering on treatment with olmesartan.

Methods: Prospective pilot open study; 17 hypertensive patients were treated with progressive olmesartan doses starting with 20 mg qd. BP was measured at 3, 6 and 9 weeks after treatment initiation. If treatment failed to normalize BP after 3 weeks, olmesartan dose was increased to 40 mg qd, and if still hypertensive after 6 weeks, 12.5 mg of hydrochlorothiazide qd was added. ROCK activity was measured at baseline and 9 weeks after treatment as myosin phosphatase target subunit 1 phosphorylation (MYPT1-p/T ratio) in PBMC.

Results: Mean baseline BP was 162 ± 4.9/101 ± 2.4 mmHg. After 9 weeks of treatment, both systolic and diastolic BP were reduced by 41 and 22 mmHg, respectively ($p<0.05$). Mean pretreatment MYPT1- p/T ratio in PMBCs was significantly reduced by 80% after 9 weeks with olmesartan ($p<0.01$).

Conclusion: Normotension achieved after 9 weeks in 82% of the patients treated with olmesartan was associated with a significant reduction of ROCK activity in PBMC.

Keywords: Anti-hypertensive therapy, hypertension, rho kinase, angiotensin II, angiotensin receptor blockers, olmesartan.