## LETTERS

# The role of moxonidine, a second generation centrally acting antihypertensive agent as antihypertensive therapy in the obese

Dear Editor,

Moxonidine is the newest, second generation, centrally acting antihypertensive agent. It has selective agonist activity at imidazoline I1 receptors and less adverse effects than the other centrally acting sympatholytic drugs[1].This fact authorizes the frequent use of moxonidine in clinical practice, as monotherapy or in combination with other antihypertensive agents. Also, moxonidine is used in the treatment of obese patients with metabolic syndrome, because this antihypertensive agent reduces leptin levels in plasma and reduces weight in obese patients, through the action on the Sympathetic Nervous System (SNS)[2]. The aim of our study is to detect the effect of second generation centrally acting antihypertensive agents, like moxonidine, in the management of hypertension in obese. So, we studied 90 patients, with grade 1 and grade 2 arterial hypertension[3], who were treated with moxonidine (as monotherapy, in titrated dose 0,2 mg - 0.6 mg/day) for 12 weeks, 30 hypertensive obese, 30 hypertensive overweight and 30 hypertensive with normal weight (50% males for each group). Blood Pressure (BP) measurements were done by mercury sphygmomanometer according to the European Hypertension Society guidelines. The dietary intake and the exercise of the patients, was the same before and after the treatment. Patients with diabetes or other chronic diseases were excluded. Statistical analysis was made by t student test (SPSS) and the level of statistical significance was defined at $p<0.05$.

In the group of obese patients, there was no significant increase or reduction of body weight (BW), or Body Mass Impact (BMI) after moxonidine treatment ($p>0.05$). In obese women, there was a significant reduction ($p<0.05$) of SBP and DBP after treatment (4.60 mmHg and 3.40 mmHg), while in obese men there was no difference in either SBP or DBP ($p>0.05$). Subsequently, the different response of the two sexes to the administration of moxonidine, concerning the reduction of SBP and DBP, could not be attributed to a reduction of BW. In men, mean BW was $110.73 \pm 5.4$ kg before and $111.73 \pm 5.8$ kg after treatment (p=0,468), while in women $105.8 \pm 4.07$ kg and $105.66 \pm 4.11$ kg, respectively (p=0.344). However, the small weight gain in men (1 kgr), although not statistical significant, compared with weight reduction in women (0.134 kg), may be partially responsible for the difference of blood pressure response after treatment.

In the group of overweight patients, there was a significant reduction of weight and BMI after treatment with moxonidine, with simultaneous decrease of SBP and DBP ($p<0.05$). The same was observed, when the analysis concerned each sex separately ($p<0.05$).

In the group with normal weight hypertensive patients, there was a reduction of weight and BMI ($p<0.05$) with simultaneous decrease of SBP and DBP, after treatment with moxonidine ($p<0.05$). In the group of normal weight hypertensive men, there was no reduction of either weight or BMI ($p>0.05$), despite the decrease in SBP ($7.67 \pm 4.08$) and DBP ($5.4 \pm 3.39$). In the group of normal weight hypertensive women, there was a decrease in BW ($0.43 \pm 0.59$) and BMI ($0.16 \pm 0.21$), SBP ($11.73 \pm 6.07$) and DBP($5.87 \pm 6.31$). There was no statistical significant difference between men and women with regard DBP lowering before and after treatment (p=0.8), while there was statistical significant difference (p=0.04), with regard SBP lowering, in favor of women.

Conclusively, women either obese or normal weight, seems to respond better to antihypertensive treatment with moxonidine, with a reduction of SBP and DBP which may reflect the greater stimulation of the SNS in women[4] before treatment and contribution to the increase of blood pressure, as well as a more beneficial effect on BW reduction in females.

**Conflict of interest**

None Declared

**References**

1. Karlafti E, Savopoulos CH, Baltatzi M, Hatzitolios Al. The position of central acting sympatholytic agents on Arterial hypertension therapy. Arterial Hypertens. 2010; 19: 32-43.
2. Karlafti EF, Hatzitolios AI, Karlaftis AF, Baltatzi MS, Koliakos GG, Savopoulos CG. Effects of moxonidine on sympathetic nervous system activity: An update on metabolism, cardio, and other target-organ protection. J Pharm Bioall Sci. 2013; 5: 253-256.
3. Mancia G, Fagard R, Narkiewicz K, Redón J, Zanchetti A, Böhm M, et al. 2013 ESH/ESC Guidelines for the management of arterial hypertension: the Task Force for the management of arterial hypertension of the European Society of Hypertension (ESH) and of the European Society of Cardiology (ESC). J Hypertens. 2013; 31: 1281-1357.
4. Agelink MW, Malessa R, Baumann B, Majewski T, Akila F, Zeit T, et al. Standardized tests of heart rate variability: normal ranges obtained from 309 healthy humans, and effects of age, gender, and heart rate. Clin Auton Res. 2001, 11: 99-108.

**Keywords :** moxonidine, centrally acting agents, hypertension

**Corresponding author:** Christos G. Savopoulos, As. Prof of Internal Medicine, 1st Medical Department of Internal Medicine, AHEPA Hospital, St. Kiriakidi 1, 54636, Thessaloniki, Greece, tel : +302310993480, fax: +302310994918, e-mail: chrisavop@hotmail.com

Karlafti E, Hatzitolios A, Savopoulos Ch

1st Medical Propedeutic Department of Internal Medicine, Medical School, Aristotle University of Thessaloniki, AHEPA Hospital, Thessaloniki, Greece