

β -Blockers or β -Agonists? That's the Question in the COPD Management

Mostafa Ghanei^{1*} and Saeed Taheri²

¹Chemical Injuries Research Center, Baqiyatallah University of Medical Sciences; Tehran; Iran

²Dr. Taheri Medical Research Group, Tehran, Iran

Beta-blockers have long been known as agents posing bronchospasm in medical literature, and this has made physicians to have a reasonable fear in employing these agents for managing cardiovascular complications in the Chronic Obstructive Pulmonary Disease (COPD). On the other hand, cardiovascular comorbidities, alongside cancers, are the leading causes of mortality in mild to moderate COPD patients [1], and β -blockers have secured their position as one of the best-distinguished cardioprotective agents with the highest effectiveness and lowest rate of side-effects, in the current literature.

The existing evidence suggests that although using conventional long-acting β_2 agonists (LABAs) in COPD patients is associated with lower disease exacerbation rates, it promises no survival advantage over placebo. This observation has been explained with the cardiovascular burden of using LABAs in these patients. So, there is a controversy in the management of COPD patients with β agonists: On one side LABAs control COPD symptoms and attenuate exacerbation rates; and on the other side they deteriorate cardiovascular complications in this highly susceptible patient population.

In the recent years, however, the taboo of using beta blockers in COPD patients has been seriously challenged, and evidence suggestive of reasonable effectiveness and safety for using beta-blockers in COPD patients has come to the literature. van Gestel et al. [2] in their excellent work have investigated the impact of cardioselective beta-blockers in 3371 patients with cardiac surgery with or without COPD [2]. COPD patients experience both short-(30 days) and long-term survival benefit over those who had not been given these agents. Similar observation has been reported in another cohort study by by Rutten et al. [3] in which treatment with beta-blockers was significantly associated with favorable independent impact on either survival or exacerbation rates.

Since β receptors in the lung and cardiovascular systems are of different types, it might be literally said that agents selectively affecting one type, may not have an effect on the other. However, the degree of selectivity is not perfect and there is always some interactions even between selective agents and other types of β receptors; and that's what concerns physicians to be very reluctant to prescribe even cardioselective β_1 -blockers in COPD patients. However, a meta-analysis of randomized controlled trials investigating potential effects of cardioselective β_1 blockers on pulmonary function showed no significant effect [4]. Moreover, the cumulative evidence also indicates that cardioselective β_1 -blockers (e.g. metoprolol and atenolol) promise survival advantage for COPD patients with cardiac complications which far outweigh their potential risks [5].

Putting all the existing evidence together, we believe the literature suggests that cardioselective β_1 -blockers are effective and safe in COPD patients, and can be used in these patients to control cardiovascular complications which are very prevalent in this patient population.

As the final words, the experimental science as a whole and medicine as particular is evidence-based, and our endeavors should direct in a way to provide the patients with the highest possible clinical gain together with posing them to the least possible risk; and these all comes when clinical trials with strong methodologies are conducted to provide the most accurate and detailed data for indications and

contraindications of pharmaceutical prescription in the clinical practice; so we recommend β -agonists to be excluded from therapeutic regimens for COPD patients and they can be well substituted by anticholinergic agents (like ipratropium) for symptomatic management of COPD. Instead, β -blockers which are documented agents able to increase survival can be safely used in COPD patients.

References

1. Sin DD, Anthonisen NR, Soriano JB, Agusti AG (2006) Mortality in COPD: Role of comorbidities. *Eur Respir J* 28: 1245-1257.
2. van Gestel YR, Hoeks SE, Sin DD, Welten GM, Schouten O, et al. (2008) Impact of Cardioselective β -Blockers on Mortality in Patients with Chronic Obstructive Pulmonary Disease and Atherosclerosis. *Am J Respir Crit Care Med* 178: 695-700.
3. Rutten FH, Zuihthoff NP, Hak E, Grobbee DE, Hoes AW (2010) Beta-blockers may reduce mortality and risk of exacerbations in patients with chronic obstructive pulmonary disease. *Arch Intern Med* 170: 880-887.
4. Salpeter SR, Ormiston TM, Salpeter EE, Poole PJ, Cates CJ (2003) Cardioselective beta-blockers for chronic obstructive pulmonary disease: a meta-analysis. *Respir Med* 97: 1094-1101.
5. Albouaini K, Andron M, Alahmar A, Egred M (2007) Beta-blockers use in patients with chronic obstructive pulmonary disease and concomitant cardiovascular conditions. *Int J Chron Obstruct Pulmon Dis* 2: 535-540.

*Corresponding author: Mostafa Ghanei MD, Chemical Injuries Research Center; Baqiyatallah University of Medical Sciences; Tehran; Iran, Tel: + 98 21 66582551; Fax: + 98 21 66582535-36; E-mail: prof.ghanei@gmail.com

Received December 02, 2013; Accepted December 04, 2013; Published December 06, 2013

Citation: Ghanei M, Taheri S (2013) β -Blockers or β -Agonists? That's the Question in the COPD Management. *J Pulmon Resp Med* S4: e001. doi:10.4172/2161-105X.S4-e001

Copyright: © 2013 Ghanei M, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.