Title: Methacoline challenge test as an evaluator of response to statins in bronchial hyperresponsiveness

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Body: 3-hydroxy-3-methylglutaryl-CoA reductase inhibitors (statins), are effective serum cholesterol-lowering agents which they may also have anti-inflammatory properties. The objective of this study was to evaluate the effect of atorvastatin on bronchial hyperresponsiveness. Adult patients (age 14 to 65 years) with bronchial hyperresponsiveness (BHR) diagnosis based on the spirometry with methacholine challenge test were entered into the study. The study was conducted in the National Research Institute of Tuberculosis and Lung Disease. Patients were randomized to receive either atorvastatin 20 mg/day or placebo for 4 weeks. Spirometric parameters were determined at baseline and at completion of the study. Twenty two patients with the age of 32.95±10.30 years completed the trial. Changes in airway responsiveness categories (moderate to severe, mild, borderline, normal) after the intervention were not significant in atorvastatin group as in placebo group (p value = 0.131 for atorvastatin group and p value = 0.305 for placebo group). Also, changes in methacholine solution number (different concentrations of methacholine) which caused at least 20% decrease in FEV1 were not significant between groups (p value = 0.089). Although we could not find a significant difference, the patients' fall in FEV1 in atorvastatin group was observed in higher concentrations of methacholine. Median before treatment versus after treatment in atorvastatin group was 1 versus 4 mg/ml, while those were 2 versus 1 mg/ml in placebo group. This study showed a better but no significant hyperresponsiveness control in the treatment group. The result may be presented more pronounced, if we could increase the sample size.