**Title:** Bronchial hyper-reactivity diagnosed by methacoline challenge and the pre-test clinical probability

**Body:** Aim: To assess the correlation between methacoline challenge results and the pre-test clinical probability of bronchial hyper-reactivity. Subjects and methods: Patients with respiratory symptoms raising suspicion of asthma and patients with partially controlled asthma performed methacoline challenge (MC) using ATS Guidelines (1999). The test was considered negative for a PC20 >16 mg/mL and borderline for 8-16 mg/mL. Bronchial hyper-reactivity was considered severe for PC20 <0.125 mg/mL. Pre-test probability of bronchial hyper-reactivity was recorded by the pulmonologists using visual analogic scale (VAS) based on history, clinical findings and previous spirometry results; the scores ranged from 0 (no hyper-reactivity) to 10 (doubtless hyper-reactivity). Results: 50 patients were evaluated. VAS scores and PC20 values differed significantly in the two groups: - In the 26 patients with known asthma VAS scores were 5.1-10 (mean 7.6). MC showed moderate or severe bronchial hyper-reactivity in all subjects, with PC20 0.03-2 mg/mL (mean 0.56). - In the 24 patients with suspicion of asthma VAS scores were 0.9-9 (mean 4.8). MC was negative in 13, borderline in 2 patients and showed bronchial hyper-reactivity in 9 (severe in 1, moderate in 5, mild in 3 patients; mean PC20 5.3). A strong correlation was seen between VAS pre-test scores and PC20 values in the suspicion of asthma group ($r=-0.832$, $p=0.000$) and a weak correlation in the known asthma group ($r=-0.389$, $p=0.049$). Conclusions: Pre-test clinical probability of bronchial hyper-reactivity recorded by the pulmonologists on visual analogic scale correlated well with the PC20 values at methacoline challenge in patients with suspicion of asthma.