

Comparative analysis of COPD associated with tobacco smoking, biomass smoke exposure or both

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Background: Exposure to noxious gases and particles contained in both tobacco smoking (TS) and biomass smoke (BS) are well recognized environmental risk factors for chronic obstructive pulmonary disease (COPD). COPD is characterized by an abnormal inflammatory response, both in the pulmonary and systemic compartments. The differential effects of TS, BS or their combined exposure have not been well characterized yet. This study sought to compare the lung function characteristics and systemic inflammatory response in COPD patients exposed to TS, BS or their combination. **Methods:** Sociodemographic, clinical and lung functional parameters were compared across 49 COPD patients with a history of smoking and no BS exposure (TS COPD), 31 never-smoker COPD patients with BS exposure (BS COPD), 46 COPD patients with a combined exposure (TS + BS COPD) and 52 healthy controls (HC) who have never been exposed neither to TS or BS. Blood cell counts, C-reactive protein (CRP), fibrinogen and immunoglobulin E (IgE) levels were quantified in all four groups. **Results:** TS + BS COPD patients exhibited significantly lower oxygen saturation than the rest of groups ($p < 0.01$). Spirometry and diffusing capacity were significantly higher in BS than in TS or TS + BS patients. CRP levels were significantly higher in TS COPD patients than in BS COPD group ($p < 0.05$), whereas fibrinogen was raised in COPD patients with a history of smoking (TS and TS + BS) when compared to control subjects ($p < 0.01$). Finally, COPD patients with BS exposure (BS and BS + TS groups) showed higher IgE levels than TS and

HC ($p < 0.05$). Conclusions: There are significant physiological and inflammatory differences between COPD patients with TS, BS and TS + BS exposures. The latter had worse blood oxygenation, whereas the raised levels of IgE in BS exposed patients suggests a differential Th2 systemic inflammatory pattern triggered by this pollutant. © 2018 The Author(s).

Biomass smoke

COPD

Immunoglobulin E

Indoor pollution

Oxygen saturation

Systemic inflammation

C reactive protein

fibrinogen

immunoglobulin E

autacoid

aged

Article

biomass

biomass smoke

blood cell count

chronic obstructive lung disease

clinical article

comparative study

controlled study

demography

environmental exposure

female

functional assessment

human

human cell

inflammatory disease

lung diffusion capacity

male

medical history

oxygen saturation

respiratory tract parameters

smoke

smoking

spirometry

systemic disease

blood

chronic obstructive lung disease

environmental exposure

forced expiratory volume

middle aged

pathophysiology

physiology

procedures

smoke

smoking

trends

very elderly

Aged

Aged, 80 and over

Biomass

Environmental Exposure

Female

Forced Expiratory Volume

Humans

Inflammation Mediators

Male

Middle Aged

Pulmonary Disease, Chronic Obstructive

Smoke

Spirometry

Tobacco Smoking