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Press release

## The dangerous liaison between respiratory diseases such as COPD, and cardiovascular disease

L'Aquila, 9 April 2015 – When someone has trouble breathing, nearly always has a cough and often has a temperature because the bronchi are full of mucus, bacteria develop very rapidly and give rise to repeated infections. This is called Chronic Obstructive Pulmonary Disease (COPD), an acronym that identifies two very widespread diseases, especially among the elderly: chronic bronchitis and pulmonary emphysema. However, even though these are the symptoms, COPD should not be considered as just a respiratory disease. In fact, various studies have reported the presence of different diseases associated with COPD, including hypertension, diabetes, heart failure and arrhythmias. In addition, the therapies for combating COPD may also increase the risk of cardiovascular disease and vice-versa, pharmaceutical products for cardiovascular diseases may have effects on the respiratory tract. Leading national experts in respiratory and cardiovascular diseases will discuss these topics on occasion of the convention entitled “The missing link between cardiovascular disease and COPD”, to be held from 9 to 11 April at the Hotel San Donato Resort of Santi di Preturo (L'Aquila), organised by the Division of Internal Medicine and Nephrology of the University of L'Aquila and sponsored by the Fondazione Internazionale Menarini.

“Chronic Obstructive Pulmonary Disease (COPD) is the only chronic disease the prevalence of which is increasing worldwide. It is currently the fourth most common cause of death at a global level and it will become the third most common cause of death within the space of ten years”, explains Claudio Ferri, Professor of Internal Medicine at the University of L'Aquila and chairman of the convention. “COPD is, on a par with heart failure, a classic disease of frail patients, often the elderly, who are carriers of the most debilitating chronic diseases, and it is strongly associated with cardiovascular diseases. This association can be explained in part by the presence of shared risk factors (especially cigarette smoke), however in recent years, the hypothesis has taken root that COPD may trigger a systemic inflammatory condition and that it is this phenomenon that determines the increased risk of cardiovascular diseases in patients suffering from this respiratory disease. From a pooled analysis of two large epidemiological studies, the Atherosclerosis Risk in Communities (ARIC) Study, and the Cardiovascular Health Study (CHS), which included more than 20,000 patients, it was found that the prevalence of cardiovascular disease among patients with COPD was 20-22%. The coexistence of the two diseases is conducive to a worsening of the prognosis as well as increasing the risk of death”.

The presence of common risk factors such as cigarette smoke, a sedentary lifestyle and genetic predisposition seems to explain the physiopathological connection that links COPD with cardiovascular diseases. “In this context, the “Evaluation of COPD Longitudinally to Identify Predictive Surro-

gate Endpoints” (ECLIPSE) study allowed for highlighting not only how cigarette smoke is a determining cornerstone, together with the female gender, in the progression of the respiratory disease, but also how it carries out a crucial role in relation to the presence of cardiovascular disease in patients with COPD”, adds Ferri.

Undoubtedly, apart from its direct action on the lung parenchyma, cigarette smoke is also able to cause a chronic inflammatory state that induces oxidative stress at a bronchial and vascular level, with a reduction in the bioavailability of nitrogen monoxide, the onset of atherogenic endothelial dysfunction and a prothrombotic alteration in the haemocoagulative profile. “In addition to this however, it seems that COPD is also associated per se with an increase in both the prevalence of the cardiovascular risk factors, and the incidence of cardiovascular diseases”, continues Ferri. “In COPD the increased risk of cardiovascular mortality and morbidity would seem to be independent from the classical risk factors (smoke, age, male gender) as it has been observed that only a slight alteration of the respiratory function can give rise to an increase of up to 30 percent in the cardiovascular events, in particular, for ventricular arrhythmias. For these reasons, the prevention of cardiovascular risks in patients with COPD is necessary in order to reduce the mortality rate and the worsening of the heart conditions”.

Moreover, the hypothesis it taking hold that the treatment of the cardiovascular comorbidity may also improve the management and course of COPD. Various drugs against cardiovascular diseases have revealed their effectiveness in this sense. “The statins, for example, have proved that they are able to prevent the development of pulmonary emphysema, significantly reducing the annual decline of the respiratory function, as well as reducing the incidence of mortality from COPD. The ACE-inhibitors and the ARBs have protective effects on the respiratory system. As far as the beta-blockers are concerned, the situation is more complex since their use is still too often incongruously avoided a priori in cardiac patients with COPD due to the fear that there could be negative repercussions on the respiratory disease. This prescriptive reticence however, is certainly not supported by clinical studies which, to the contrary, have amply demonstrated the safety, tolerability and efficacy in prognostic terms, also in the presence of obstructive pulmonary disease”, concludes Ferri.

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