“Influence of chronic obstructive pulmonary disease treatment in endothelial function of patients at high and very high cardiovascular risk”

Introduction

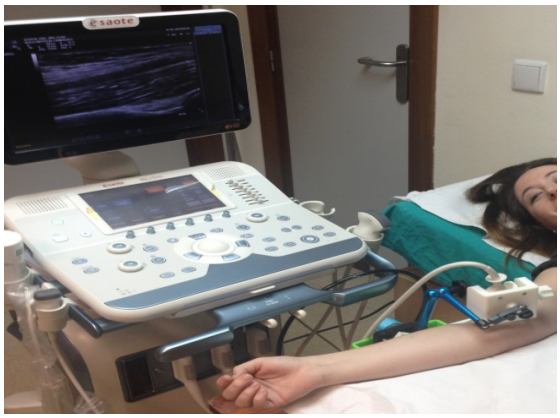
Metabolic-Vascular Unit (Division of Internal Medicine, La Paz University Hospital-IdiPaz, Madrid), is constituted of 5 physicians, a nurse and a pharmacist. We are engaged in clinical care and research of atherosclerotic cardiovascular disease (ASCVD) and its predisposing risk factors.

Challenge

Many patients at high cardiovascular (CV) risk suffer from chronic obstructive pulmonary disease (COPD). We hypothesize that the diagnosis and adequate treatment of COPD may be associated to a better tissue oxygenation, lessen systemic inflammation and, thus, improve endothelial function. We intend to assess the variations of endothelial function, after optimizing COPD therapy, in high and very high CV risk patients. To our knowledge no previous studies have explored this hypothesis. The main challenge is to perform accurate measures of endothelial function by a reproducible method that allows to detect changes after optimizing bronchodilator therapy.

Solution

Using Cardiovascular Suite-FMD Studio we can detect and quantify changes in vascular endothelium function by measuring flow mediated-dilation (FMD) of brachial artery (images).

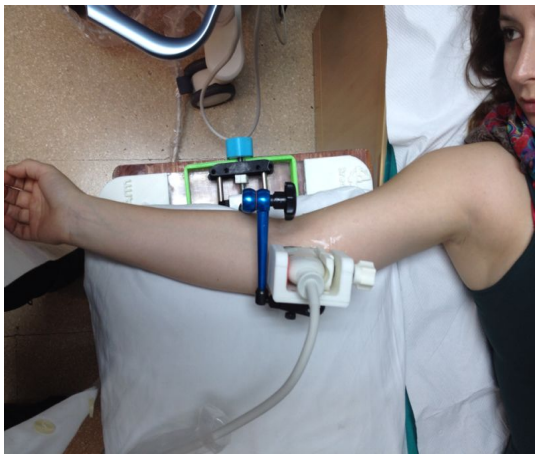


Benefit

Demonstration that an adequate therapy for COPD improves endothelial function may support the active search and treatment of this condition in patients at high cardiovascular risk. In addition to the management of traditional cardiovascular risk factors such tobacco use, lipid disorders, arterial hypertension or glucose metabolism abnormalities, conducting an active search of COPD and optimizing its treatment may be a part of the global therapy offered to these patients. Our study could be a first step in exploring the influence of COPD (impaired tissue oxygenation and persistent inflammation) in patients at high or very high CV risk.

Findings

We have initiated a prospective study with patients diagnosed as having a high and very high CV risk (according to recommendations of European Society of Hypertension and European Society of Cardiology). These patients will be recruited from the Metabolic-Vascular Unit. Patients will be tested for COPD diagnosis (pulmonary function tests). When diagnosis is confirmed, local guidelines will be followed to establish the most adequate COPD therapy. FMD studies will be done at 0 (basal, pre-treatment), 3 and 12 months after optimizing treatment. So far, we have performed basal studies of 7 patients.



Conclusion

Cardiovascular Suite-FMD Studio is an useful and reliable tool for measuring flow mediated-dilation (FMD) to detect and quantify changes in vascular endothelium function.

Quipu srl is a spin-off company of the Italian National Research Council and the University of Pisa, Italy. The mission of Quipu is to provide products and services in high-tech diagnostic and preventive medicine. In particular, the core business is the development and production of systems and techniques for assessing early markers of cardiovascular risk. Quipu's main product is Cardiovascular Suite, which is a software program for assessing markers of cardiovascular risk from ultrasound images. The suite consists of two applications: (i) FMD Studio, for assessment of endothelial function; (ii) Carotid Studio, for assessment of carotid stiffness and intima media thickness. The advantages of the Suite are: high reliability and accuracy, high integration, ease of use, real-time processing. Furthermore Quipu offers consultation services, image reading services and training programs

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