TECHNOLOGY OFFER

Test for predicting blood pressure response to continuous positive air pressure treatment (CPAP) in patients with resistant hypertension

BACKGROUND

Cardiovascular disease is the leading global cause of death and Hypertension is likely the most important among all risk factors associated with the development of cardiovascular disease. Between **12% and 27% of all hypertensive patients are considered as suffering from resistant hypertension (RH**) and its incidence is anticipated to increase in the upcoming years. RH is defined as hypertension that remains above goal blood pressure in spite of using, at once, three antihypertensive agents belonging to different drug classes.

Obstructive sleep apnea (OSA) is a common disease that affects approximately 10% of the middle-aged population. It is associated with increased cardiovascular disease and overall mortality risks. OSA is a common cause of systemic hypertension and 70 % of patients with resistant hypertension (RH) also suffer from obstructive sleep apnea (OSA).

CPAP treatment in patients with resistant hypertension and OSA has proven effective in controlling blood pressure. Therefore in the Hypertension Units, **CPAP treatment is a therapeutic option for the blood pressure control in patients with RH and OSA. In some patients CPAP can induce a mean decrease of 11 mmHg in blood pressure.** This blood pressure reduction is associated with a dramatic reduction in the relative risk of stroke, coronary heart disease, heart failure, major cardiovascular events, cardiovascular deaths and mortality.

Nevertheless 25-30% of patients who use CPAP treatment for more than 4 hours per night do not experience a positive effect on blood pressure and in some cases it can even induce an increase.

Currently **there is no method for predicting response of HR to CPAP treatment and there is a need to identify those responder patients that would benefit from CPAP treatment for blood pressure control.**
The predictive identification of the responders will avoid costs and time with non-responder, which could be derived to other alternative therapies. Moreover, many secondary adverse effects or even deleterious effects in non responders could be also avoided.

TECHNOLOGY DESCRIPTION

CPAP therapy is a new therapeutic alternative for the control of blood pressure in 70-75% of patients with resistant hypertension and sleep apnea. The present **invention refers to a set of miRNAs** which expression in a plasma sample can predict blood pressure response to CPAP treatment and therefore **identify those patients with RH and OSA who will exhibit a favorable blood pressure response to CPAP.**
The method of the invention is **reliable and provides high sensitivity and specificity values**. In addition, the method is easily applicable to clinics due to the provision of a **quantitative score parameter (HIPARCO-score) informing the clinician** of the probability of response to CPAP treatment. (Method publication: Sánchez-de-la-Torre M. Journal of the American College of Cardiology, *in press*)

ADVANTAGES

• Is a very **quick** (hours) and **minimally-invasive** method (blood sample).

• The method provides a **way to securely identify RH patients that can benefit from CPAP treatment**.

• It facilitates the implementation of CPAP therapy to **control blood pressure in patients with OSA RH in a cost-effective manner.**

• It will **reduce economic costs** to health providers since could be used to reduce CPAP treatment only to a set of patients that will positively respond.

• It will **reduce time and avoid additional complications to patients** that will not respond.

CURRENT STATE OF DEVELOPMENT

The group is currently evaluating the possibility to **broad the clinical areas** that may benefit from using the method.
Moreover a **tool to achieve a user-friendly way for clinicians evaluating the use of CPAP** as therapy for a specific patient is under development.

GOAL

License agreements and /or co-development and commercialization agreements with a Biotech, Bio-Pharmaceutical or Diagnostics company for the development of products derived.

PATENT

European Patent application, December 2014.

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