Translational medicine in obstructive sleep apnea

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European Respiratory Journal 2014 44: P2267; **DOI:**

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Abstract

Introduction: The Obstructive Sleep Apnea (OSA) is highly prevalent in the population and the "gold standard " for diagnosis is polysomnography (PSG). This is not always available, so a validated alternative to find and to treat severe cases is the use of simplified studies at home. [1]

Translational medicine is the transfer of basic science to the medical practice from the translation of scientific findings or developments made in laboratories to products or methodologies using everyday in medical practice.

Objective: Develop a diagnostic home device that uses an automatic algorithm from the pulse oximetry signal (SaO2).

Materials and methods: We designed a hardware, with an automatic algorithm that uses the SaO2 signal. We create an Oxygen Desaturation Index (ODI) that estimated an apnea / hypopnea index (AHI) was compared with AHI calculated by an expert in 25 studies PSG and then compared with the AHI calculated automatically in 80 records obtained with a validated polygraph, the ApneaLink ® (AL). SaO2 signals were analyzed with the two detection techniques that we named M1 and M2.[2]We have begun to use the hardware with this algorithm in people.

Results: The Area Under Curve (AUC) for ODI M1/IAH PSG was 0,97. The AUC for ODI M2/ IAH PSG: 0,94. The AUC for ODI (AL) /IAH (AL) was 0,92 (0,85 - 0,96). The AUC for ODI M1/IAH AL was 0,94 (0,87-0,97) and the AUC for IDH M2/ IAH AL was 0,95 (0,88 – 0,98).

Conclusions: There is a good correlation between AHI estimated by the new hardware and algorithm compared to PSG and PR. The hardware works properly with this algorithm.This is an example of translational medicine in sleep medicine.

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ISSN

Print ISSN: 0903-1936
Online ISSN: 1399-3003