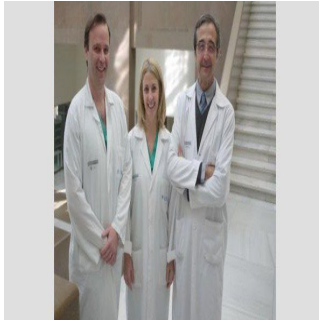## Reducing Lung Injuries from Mechanical Ventilation

An experimental work shows for the first time the utility of the stress index to adjust in real time artificial ventilation supply in order to avoid lung injuries. Results of the study are published in the journal *Critical Care*.

The research work was led by Professor Francisco Javier Belda, Head of the Department of Anaesthesia and Intensive Care at the Clinical University Hospital of Valencia and Dr. Carlos Ferrando, from the same institute. Their work is part of the Universitat de València's pioneering research to advance the prevention of lung damage from mechanical ventilation in operations that require general anaesthesia.

In the study, Belda and Ferrando used a pioneering technique of indexing of stress. "When artificial breathing is applied there are two parameters to avoid damaging the lung: the amount of gas volume (oxygen plus air), and positive pressure applied to prevent this body from collapsing and, so far, this indicator is only used to the pressure that prevented the collapse," according to Prof. Belda.

However, as Dr. Ferrando points out, "we have verified that it is much more efficient to regulate positive pressure with other parameters of respiratory mechanics and reserve the stress index to indicate the necessary volume of gas that prevents the lung injury."

Their work was conducted over a period of two years through experimenting with animals in the laboratories of the Faculty of Medicine and Dentistry of the Universitat de València. Recently researchers have also conducted tests of this new application of the stress index in healthy patients during surgical operations.

Data show that lung complications, more or less severe, occur in up to 30-40 percent of patients who have been given artificial ventilation. "While these often have no impact on long-term patients it can lead to increased hospitalisation days, use of resources and therefore an increase in health spending", explains Dr. Ferrando.

Marina Soro, research coordinator of the Anaesthesiology Service at the Clinical University Hospital of Valencia, says these results "conclude experimental work that we started over 10 years ago, a period in which our laboratory at the Mixed Unit of Research has advanced to study any model, from cells to large animals."

Belda is a professor of anaesthesiology at the Department of Surgery of Universitat de València. As a clinician, he has devoted his life mainly to the management of critical care patients, with special attention to ventilation strategies for lung injury and haemodynamic monitoring and management.

Dr. Ferrando, an anaesthesiologist, has been with the Clinical University Hospital of Valencia since 2010. His priority research area is respiratory, especially related to artificial ventilation, and he recently won a grant from the Social Fund (FIS) of the Carlos III Health Institute and the European Young Researchers' Award, given by the European Society of Anaesthesiology.

Source: AlphaGalileo.org
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