Italian position on hyperbaric oxygen therapy in multiplace hyperbaric chambers during coronavirus disease (COVID-19) outbreak.

To cope with the coronavirus disease (COVID-19) outbreak, a position document has been jointly drawn up by all the Italian scientific societies and associations in the hyperbaric medicine field – SIAARTI, SIMSI, ANCIP, ASPATI. The document analyzes both guidelines and recommendations that must be proposed from now on to all of the public and private stakeholders nationwide operating in the field of hyperbaric oxygen (HBO) therapy services.

The cornerstone is the analysis of the procedures to avoid cross contamination. The recommendations are drawn up to encourage, where reasonably possible, access to the hyperbaric center only for people who are free from the infection. The first step is teleconsultation, which has two purposes: to verify the absence of the ongoing infection or the awareness of being positive for the nasopharyngeal swab and the real need for HBO treatment. Upon arrival at the hyperbaric center the preventive measures are based on the obligatory access in a single entrance of the facility. Here health education is administered: A billboard lists the main rules that the patient must know and respect. The patient must pass a checkpoint where the temperature is analyzed with a digital system and it is verified – through a questionnaire – that no changes have occurred compared to what was stated in the teleconsultation. After that, patients must perform hand hygiene using hand sanitizer and wear a surgical face mask.

The staff members who assist patients in the hyperbaric chamber are encouraged to respect, in their private life too, the hygiene rules recommended by the Ministry of Health. During working hours all personnel must wear appropriate personal protective equipment: cap, face shield or goggles, face mask, impervious gowns (long-sleeved overalls) and disposable gloves.

Only multiplace hyperbaric chambers are in use in Italy, where the number of occupants has been limited in every session in order to maintain a distance of more than one meter between them. In addition, separation fireproof polycarbonate panels have been inserted between patients.

In order to isolate patients from ambient air, they start to breathe through the individual breathing systems as soon as possible after closing the hatch, even before reaching a therapeutic level of pressure; this continues until the end of decompression (or until exhalation valves allow). To avoid eliminating air breaks it is advised to install a device (such as MED 2K9) on the medical air pipeline, which reduces the pressure from 8.5 bar to 4.8 bar, which is necessary for the proper functioning of the second stages in a dry hyperbaric atmosphere. This reduction unit permits the technician at the console to switch the breathing gas from oxygen to medical air and vice versa by following the prescribed therapy. In accordance with EN-ISO 7396-1, the device is formed by two closable reducers and an UNI attack for a possible other source of gas in case of emergency.

In line with the procedure to avoid cross contamination and, in addition to the EUBS-ECHM document, the installation in each exhaust line of a bidirectional and virus retention-certified HME F 8 filter is recommended. Between sessions, as further integration, the chamber atmosphere and gas lines have to be appropriately cleaned with a gas extractor in order to sanitize the hyperbaric chamber with a suitable gas (i.e., hydrogen peroxide).

In Italy, these procedures have been in place since the COVID-19 outbreak (February 2020) and so far (May 2020) there have been no cases of contagion with SARS-CoV-19 virus in patients and staff. Italian companies (such as DRASS srl of Livorno) have designed multiplace hyperbaric chambers specifically designed for HBO2 treatment of patients with COVID-19 infection. For every patient with confirmed or suspected COVID-19, even in the absence of pneumonia, HBO2 is not recommended, except in cases in which there is the possibility of an immediate life-threatening risk if not treated.

Editor: Vincenzo Zanon.

MED 2K9 device which reduces pressure

Multiplace hyperbaric chamber during coronavirus outbreak disease with separation panels and limited number of patients dressed with appropriate PPE (Hyperbaric Centre of Ravenna – Italy)
DRASS multiplace hyperbaric chamber project