mindray

China with the World: COVID-19 Experts Dialogues

The 2nd Talk

March 9, 2020

Prof. Du Bin
Peking Union Medical College Hospital, Beijing
China

Dr. Du is the Director of the Department of Critical Care Medicine, Peking Union Medical College Hospital, Chief Expert of National Health Commission, President of Chinese Society of Critical Care Medicine, President of Beijing Medical Award Foundation.

Prof. Roberto Fumagalli
Head of Anesthesia and Intensive Care Department, San Gerardo Hospital, Monza, Italy
Italy

Prof. Jordi Rello
Vall d'Hebron University Hospital, Barcelona, Spain
President of Spanish Society Intensive Medicine (SEMES)
President of Spanish Society Infectious Diseases (SEIMC), Vice President of Spanish Society Pneumonia and Thoracic Surgery
Spain

Q: Starting from the patient admission to the hospital, what is your rule for ventilation? Do you start from NFNC, CPAP, NIV or go directly to intubation and invasive ventilation when the conventional oxygen therapy fails?

A: The use of NFNC as well as NIV is very popular among our patients. At the initial stage we didn't have enough devices, so physicians would grab whatever they have in hand, either face mask, NFNC or NIV, to put them on their patients.

However, the current strategy to manage hypoxemic patients with COVID-19 looks like this: for those with mild hypoxemia we try oxygen supplementation through nasal cannula or face mask; for those with severe hypoxemia, according to the duration of treating physicians, this is not sequential, and the trials are made by themselves. If the patient fails to be ventilated on NIV showing either refractory hypoxemia, unresolved respiratory distress or high drinking volume, accompanied by high tidal volume, we consider endotracheal intubation.

Q: Regarding the rule NIV management, the CRP level is important and NIV should be avoided when CRP is good but NFNC would be more helpful to patients with high percentage of failure. Do you agree that it is the right approach to start with CPAP and continue with it even after intubation?

A: Well, in terms of non-invasive mechanical ventilation mode, I would say CPAP is seldom used than BIPAP.

Q: Do you have any idea of age or comorbidities that exclude patients from mechanical ventilation support because it is futile? I mean, those patients that will die in nearly 100% of the cases. In your experience which would be the cutting age, and which are the most common comorbidities associated to mechanical ventilation support failure?

A: It is a tough question for me to answer.

Anyway, according to my understanding, the mean age of non-survivors is over 70 from not only age, but also lifestyle has a strong influence on survival rate. Anyhow, in our usual practice, cardiopulmonary reserve makes more sense towards decision making regarding ICU patient admissions.

However, some comorbidities require more attention. According to my knowledge, hypertension is a risk factor towards critically ill patients with COVID-19 infection. In our study, among non-survivors, 50% of them had a history of hypertension. Although we currently don't know any other data, you can tell the percentage of hypertension is very high, much higher than the other patients who did survive, so I think hypertension is an independent risk factor.

In addition, pregnancy is not a risk factor, unlike influenza pneumonitis. Although there are 10% of pregnant women who are severe patients, the can get very severely ill and very hard to ventilate. But it is not what we observed with COVID-19. I have seen quite a few pregnant women and they have been doing quite well.

Q(comment): I'm quite surprised about hypertension.

A: Some of my colleagues believe there is a correlation or relationship between COVID-19 and ACE II receptors. I am not sure about that, but we are discussing about the possibilities.

Q: Did you use severity scores to classify patients, or their triage was based on parameters like RR, hypoxemia, etc?

A: As far as I can tell, we don't use severity scores, neither pneumonia, CURB-65, ARDSR II, nor SAPS, neither SOFA. I think the major indicator to identify high risk patients are mainly oxygenation and respiratory rate. We don't use the presence or absence of respiratory distress. In addition to that, I would rather consider lymphocytopenia as another indicator. Also based on a recent Chinese publication delivered by our colleagues in Wuhan, they identified that hypoxemia/oxygenation, lymphocytopenia, and elderly potential survivors and non-survivors at the very beginning.

Q: What about other complications, like encephalitis, myocarditis?

A: Personally, I have never encountered any single case of encephalitis, myocarditis, or even cardiac injury. Based on the study by Liu's mentioned biomarkers of cardiac injury and I would say that more than 50% of patients admitted to ICU have elevated hypersensitive troponin-I level.

Anyhow, even with elevated level of troponin, I am didn't observe evidence of any classical manifestations of a relevant provoked myocarditis, such as cardiogenic shock or ventricular arrhythmia. It is, definitely, uncommon.

Q: In my hospital, during the first 10 days, we put ARDS 2 patients on VV ECMO and, based on biopsy, both were also confirmed with myocarditis. This is definitely different from your experience, maybe because the population is different?

A: No, not really. Some of the patients, even with decreased biomarker levels for cardiac injury, will eventually develop cardiogenic shock. Some of them even require VA ECMO or veno-venous ECMO.

Q: What about the potential use of nitric oxide for hypoxemia?

A: The use of inhaled nitric oxide is not approved yet in China, so we do not have any single case.

Q: What about Italy?

A1: We have a couple of cases, but I don't have enough experience to tell you. Unfortunately, we don't have any information on the mechanism works well. Probably, the NO improves the mismatch between the ventilation and oxygenation, but I am not sure about it.

A2: We used it in two cases, one is good, and the other is not.

Q: Was it associated with secondary pulmonary hypertension?

A2: No, in this patient we do not use Swan-Ganz catheter. Thus, I cannot tell if it improves it or not. It works for oxygenation for sure, but in the second patient it did not work, so we don't use it anymore.

Let's say, the key point to us is prone position: half of the patients improved, half not. Basically, the younger ones responded to prone-nation, the older ones did not.

Q: Yes, totally agree. Do you prone your patients in China?

A: Yes, we do. We also observed the response rate in terms of the arterial oxygenation about 70%-80% of the patients remain with severe hypoxemia when we prone them. In addition, we implemented lung recruitment maneuvers.