

Semir Nouira
Riadh Boukef
Wahid Bouida
Wieme Kerkeni
Kaouther Beltaief
Hamdi Boubaker
Latifa Boudhib
Mohamed Habib Grissa
Mohamed Naceur Trimech
Hamadi Boussarsar
Mehdi Methamem
Soudani Marghli
Mondher Ltaief

Non-invasive pressure support ventilation and CPAP in cardiogenic pulmonary edema: reply to Templier et al.

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Dear Editor,

We would like to thank Dr. Templier and colleagues [1] for their interest in our study [2]. They estimate that resolution time in our population is particularly long. Nonetheless, for objective interpretation and to understand the discrepancies observed between our results and those of previous studies it is necessary to take into consideration severity and clinical characteristics of the different patient groups. Indeed, most of our patients did not receive any specific treatment before their inclusion in the study which means that for many of them there is a substantial delay that could adversely influence clinical outcome. In contrast, in 48% of the patients included in the study published by Templier and colleagues [3] drug treatment was

started before the introduction of continuous positive airway pressure (CPAP). In addition, compared to patients included in that study, our patients had more comorbidities. It is true that resolution time can be related to the quality of medical treatment. However, this would be unlikely to explain our results as we used a standardized approach in the management of patients with cardiogenic pulmonary edema (CPE) according to current recommendations including those related to oxygen therapy. In our opinion, the main explanation for differences in resolution time between studies is related to the different definitions used. In the study by Moritz and colleagues [4], resolution time was reached and CPAP was discontinued when the patient's breathing frequency had decreased to less than 25 breaths/min and arterial oxygen saturation (SaO₂) exceeded 90% on oxygen set at 6 L/min, or when the same criteria were obtained on fraction of inspired oxygen (FIO₂) = 50% under bilevel PAP. In our study, the threshold was more restrictive requiring an arterial oxygen saturation above 96% under lower O₂ supplementation (less than 3 L/min and FIO₂ less than 35% for the CPAP and non-invasive pressure support ventilation (NIPSV), respectively). We do not agree with the suggestion that the CPAP system should be used with oxygen as the unique gas source whatever the patient's need. We think that oxygen therapy should be adjusted to provide the lowest amount needed to keep SaO₂ above 90% because, over this level, there is no significant benefit regarding the fact that the SaO₂–PaO₂ relationship is within the flat part of the curve. Moreover, in some patients with obstructive disease history, the risk of inducing acute hypercapnia could not be totally excluded [5]. Therefore, maintaining

the arterial oxygen saturation just over 90% is a safer approach than aiming for disproportionately higher oxygen saturations and is unlikely to compromise tissue oxygen delivery. The physiological principles that underlie this advice have been known for almost half a century.

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S. Nouira (✉) · R. Boukef · W. Bouida · W. Kerkeni · K. Beltaief · H. Boubaker · L. Boudhib · M. H. Grissa · M. N. Trimech
Emergency Department and Research Unit UR06SP21, Fattouma Bourguiba University Hospital, 5000 Monastir, Tunisia
e-mail: semir.nouira@rns.tn
Tel.: +216-73-532014
Fax: +216-73-460678

S. Marghli
Emergency Department,
Tahar Sfar University Hospital,
5100 Mahdia, Tunisia

H. Boussarsar
Medical Intensive Care Unit, Emergency
Department, Farhat Hached University
Hospital, 4000 Sousse, Tunisia

M. Ltaief
Department of Preventive Epidemiology,
Fattouma Bourguiba University Hospital,
5000 Monastir, Tunisia

M. Methamem
Emergency Department,
Sahloul University Hospital,
4000 Sousse, Tunisia