



## COMMENT

## High-flow oxygen therapy in palliative care: A reality in a near future?



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Received 19 May 2021; accepted 12 August 2021

Available online 15 September 2021

### Commentary

Chronic respiratory diseases are prevalent among hundreds of millions of people in the world<sup>1</sup> and their prevalence in Portugal is increasing, with asthma and Chronic Obstructive Pulmonary Disease (COPD) being the most prevalent.<sup>2</sup> Indeed, according to the World Health Organization COPD is already considered the third leading cause of death worldwide.<sup>3</sup>

In the course of time chronic respiratory diseases lead to severe symptomatic burden for patients which reflects on their family members and society and with high health costs associated.<sup>2</sup> This highlights the importance of providing palliative care (PC) with a holistic approach, focusing on the quality of life of patients and their families, preventing and relieving suffering in respiratory patients as presented by Martins et al.<sup>4</sup>

It is recognised that PC in the last 4 decades has pioneered symptomatic control and has addressed end-of-life issues / decisions in patients with neoplastic pathology, but little attention has been given to patients with progressive and irreversible chronic respiratory pathologies with limited / reserved prognosis.<sup>5</sup>

The proactive involvement of PC in respiratory patients like those with severe COPD has already been shown to have a positive impact and among them dyspnea is the most prevalent symptom, which can be quite disabling at all levels

and enhanced by several factors reflected in PC in the concept of “total dyspnea”.<sup>6</sup>

It is known that there are a range of treatment strategies for dyspnea both pharmacological and non-pharmacological to ensure symptomatic relief,<sup>7</sup> oxygen therapy being one of them but according to PC research and recommendations the routine use of oxygen treatment for shortness of breath is not recommended<sup>8</sup> and it is imperative to determine whether the use of the so-called “Palliative oxygen” is appropriate.<sup>9</sup>

At the end-of-life the delivery of oxygen can be made by conventional oxygen therapy (COT) or by non-invasive ventilation (NIV). As there is no clear evidence of symptomatic benefit of palliative oxygen in the literature its use should be on an individualized basis and the role of NIV as palliative treatment is still very uncertain. The rationale for end-of-life NIV should be to provide comfort and relief of dyspnea, but the use of NIV in patients with an order for non-resuscitation remains controversial, largely due to the lack of clarity in the defined end-of-life objectives.

Related to COT and NIV a new oxygen therapy has emerged, high-flow nasal cannula oxygen (HFNC) designed to provide oxygen at high flows with an optimal degree of heat and humidification, which is well tolerated and easy to use specially in the intensive care unit but in PC setting it is still very limited.<sup>10</sup>

HFNC therapy has specific indications and has some advantages in relation to COT or NIV because it can be less claustrophobic, produces less skin breakdown, and does not impede respiratory patients from eating or talking.<sup>10</sup>

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Physiologically, HFNC maintains the integrity of mucociliary function by delivering heated and humidified gas at natural body conditions, it reduces the anatomical dead space, improves carbon dioxide wash-out, reduces the work of breathing, generates a positive end-expiratory pressure and a constant fraction of inspired oxygen.<sup>7,11</sup>

Clinically, HFNC effectively reduces dyspnea and improves oxygenation in respiratory failure from a variety of aetiologies, thus avoiding escalation to more invasive supports.<sup>10</sup> In fact, in exacerbated COPD patients studies have already shown that HFNC is able to keep PaCO<sub>2</sub> unmodified, while oxygenation slightly deteriorates as opposed to NIV and also the work of breathing is reduced with HFNC by a similar extent to NIV, while it increases by 40-50% during COT.<sup>11</sup>

These physiological and clinical effects, specifically the comfort of the technique which is also reported to be more comfortable than COT and NIV,<sup>11</sup> indicate its potential outside the intensive care unit, namely in the PC context.

In end-of-life situations, there are few studies that attempt to compare HFNC with other treatment strategies and the majority of them compared with NIV. Peters et al<sup>12</sup> examined 50 subjects with a do-not-intubate directive and with hypoxemic respiratory failure who received HFNC and many subjects did not need to escalate to NIV. The use of HFNC was also compared with NIV in patients with end-stage interstitial lung disease, a condition associated with particularly severe hypoxaemia and devastating dyspnea and HFNC was better tolerated as the patients could eat and converse until just before death.<sup>13</sup>

In PC the ability to communicate with family and friends to allow them to resolve and discuss end-of-life issues and the possibility of oral food intake is commonly desired by patients at the end-of-life<sup>10</sup> suggesting that HFNC in these patients is a reasonable palliative treatment.

Another advantage of HFNC is that severe patients in the last phases of their disease who require a high FiO<sub>2</sub> and wish to die at home can be more easily treated in their own houses reducing hospital stay. A recent study retrospectively examined a cohort of severe patients with end-stage respiratory failure, including interstitial lung diseases, cancer and COPD, who were discharged home on long-term HFNC.<sup>14</sup> The survival of these patients was poor, but HFNC allowed the patients to return home and to be treated at reasonable cost. The role of this device, therefore, should be considered in PC.<sup>10</sup>

HFNC has remained a novelty in the world of non-invasive respiratory support in the last decade, which is why it is essential to carry out more robust studies to better define its real potential, specifically in addressing dyspnea in PC setting.<sup>15</sup>

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