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An unusual case of rapid nasal skin breakdown during noninvasive ventilation

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Dear Editor,

A 61-year-old nonsmoking woman suffering from chronic bronchiolitis obliterans without any major comorbidities was admitted to our unit for an acute exacerbation of her disease. Inflammatory parameters were only mildly elevated, and no other abnormality was observed in the chemical examination. Respiratory rate was 24 breaths/min, with normal sensorium and moderate dyspnea. Arterial blood gases (ABG) were the following: pH 7.31, PaCO₂ 73.8 mmHg, and PaO₂/FiO₂ ratio 271, so that noninvasive mechanical ventilation (NIV) was started using a nasal interface with a soft cushion. A colloid pad was applied to protect the nasal skin. Initial mode of ventilation was pressure support with inspiratory pressure 14 cmH₂O and external positive end-expiratory pressure (PEEP_{ext}) of 4 cmH₂O, and respiratory rate of 14 breaths/min. Immediate adaptation was very good, and respiratory rate decreased to ~15 breaths/min.

Thirty minutes after the beginning of the trial, the patient started to complain of nasal pain and discomfort, but after having checked and repositioned the interface, releasing

the straps just to avoid major leaks, we convinced the patient to wait until a new ABG was performed. This was done after 60 min, with the following values: pH 7.38, PaCO₂ 62 mmHg, and PaO₂/FiO₂ ratio 294.

Minutes later, despite being told about the improvement in ABG, the patient was very firm in her decision to stop NIV, because of unbearable pain at the bridge of the nose. When the nasal interface was removed a “skin breakdown with initial ulceration” [1] was present on previously intact skin. We interviewed the patient again, to try to better understand this unusual and fast deterioration. She admitted that 14 months previously she had undergone an esthetic rhinoplasty for nasal reduction and symmetry adjustment, which she did not want to mention before for her privacy. NIV was therefore suspended and medical therapy continued until she was discharged 7 days later with complete resolution of the episode.

Discussion

Nasal bridge ulceration is a relatively common complication of NIV, since it may occur in up to 10% of ventilated patients [2]. It is, however, very rare in the first few hours of ventilation [1], especially in those patients with intact skin, normal nutritional status, and no apparent risk factor (i.e., absence of diabetes, no steroid therapy, and negative smoking habit). Most plastic surgeons still perform nonconservative “open-roof” rhinoplasty with resection of the nasal hump and apposition of the lateral walls [3]. This intervention is associated in certain cases with extensive lesions of the nasal muscles and overlying skin, sometimes associated with vasomotor disturbances [3]. Indeed and most important with the

open incision, the columellar branches of the superior labial artery are removed, so the nasal soft tissues are dependent only on the lateral nasal artery and the subdermal plexus [4]. Pressure applied on the bridge of the nose is very likely to jeopardize vascularity, inducing an increase in venous stasis, and thereby producing fast damage of the skin. In conclusion, before NIV is considered, a careful interview should be performed with the patient to detect any possible “hidden” risk factors associated with skin breakdown, which may be a determinant of poor tolerance and NIV refusal.

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