

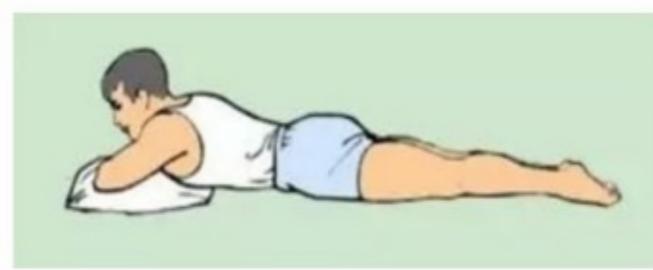
Awake Prone Positioning during the First Wave of COVID-19: Results from an Irish Multi-centre Observational Cohort Study

S Coleman¹, I Sulaiman², J Bourke³, A Malik⁴, T Hassan⁴, A Basirat⁵, W Minha⁶, D Cosgrave³, H McLoughlin⁷, K Finan⁸, JG Laffey³, A Nichol⁹, C Motherway¹, CM Nix¹, BA McNicholas³

1. University Hospital Limerick 2. Beaumont Hospital, Dublin 3. University Hospital Galway 4. Our Lady of Lourdes Hospital, Drogheda 5. Tallaght University Hospital, Dublin 6. Midland Regional Hospital, Portlaoise 7. Portlaoise University Hospital 8. Sligo University Hospital 9. University College Dublin

Introduction

Prone positioning (PP) has been proven to reduce mortality in mechanically ventilated patients with moderate to severe ARDS[1]. With the advent of the COVID-19 pandemic, interest has grown regarding the potential for awake prone positioning (APP) to improve gas exchange and reduce the need for invasive mechanical ventilation (IMV)[2, 3]. We sought to investigate the requirement for IMV in patients who underwent APP during the initial COVID-19 surge in Ireland.



Methods

Centres in Ireland were invited to participate in a multicentre observational cohort study on patients with confirmed and suspected COVID-19 managed with APP from March 24th to May 28th 2020. Demographic data, pre-, intra- and post-proning SpO₂, FiO₂, respiratory rate, length of time in the prone position, adverse events, the need for IMV and death was recorded. De-identified data was uploaded and stored on a secure web based server (Redcap). Graphpad was used for analysis. The primary outcome was need for IMV following APP. Quantitative variables are presented as mean (standard deviation [SD]) or median (interquartile range). Differences in pre and post proning SFR between patients requiring IMV were assessed with *t* test and χ^2 test for quantitative and categorical data, respectively. Ethical approval for data collection was obtained locally for each site.

Results

Eighty nine patients from 8 centres who underwent APP were recorded in the study. Mean age was 55.4±14.2 years and female patients accounted for 33(30%) of the cohort. The median BMI was 28.0 kg/m² (15.6-32). Hypertension was present in n=32(36%), diabetes in n=15(17%) and ischemic heart disease in n=9(10%) of the cohort. Patients underwent APP in the intensive care n=31(35%), high dependency n=28(31%) or general ward n=30(34%) setting. APP was not tolerated by 2 patients (<20 minutes in initial APP) and conscious sedation (dexmedetomidine, buccal midazolam or alprazolam) use was reported in n=3 cases. Eighteen (20%) patients had a starting SFR (SpO₂:FiO₂ Ratio) <150. SpO₂, respiratory rate, fraction of inspired oxygen and SFR before, during and after proning are outlined in table 1. Average length of an APP session was 6.3±5.7 hours. Twenty seven (32%) went on to require IMV with an average of 15.6±12.4 days of IMV and 5(6%) patients died. There

was no significant difference in the pre-proning SFR on Initial APP for patients that went on to require IMV (215±76 no IMV vs. 193±63 IMV, p=0.2). Patients with a pre-APP SFR<150 were not more likely to require IMV compared to those with a SFR >150 (18/64 no IMV SFR>150 vs 7/19 IMV SFR<150 p=0.5). However, patients that had a decrease in SFR following APP were more likely to require

Table 2 Mode of oxygenation at initial proning and degree of initial hypoxaemia

Mode of oxygenation	n (%)
Nasal prong oxygenation	24 (27%)
Facemask oxygenation	15 (17%)
High flow nasal cannula	17 (19%)
NIV	33 (37%)
Degree of hypoxemia n (%)	
SFR<150	19 (21%)
SFR>150	67 (75%)
Not Available	3 (3%)

IMV (15/53 vs 14/24 p=0.02 reduction or no change vs increase in SFR following APP, pre and post SFR available in n=77). These results suggest that patients with a SFR which did not disimprove with awake prone positioning were less likely to require invasive ventilation.

	SpO ₂ (%)	RR	FiO ₂	SFR
Pre-proning	94±4	26±6	0.5±0.2	206±72
Intra-proning	96±2	25±6	0.5±0.2	219±70
Post-proning	94±5	25±7	0.4±0.2	242±86

Conclusion

Awake prone positioning is a simple intervention that was well tolerated with no adverse events related to its implementation. Our data reveals there was no difference in the starting SFR between those that went onto require IMV but those with no change or a reduction in SFR on their initial APP were more likely to require IMV.

References

1. Guerin C, Reignier J, Richard JC, Beuret P, Gacouin A, Boulain T, Mercier E, Badet M, Mercat A, Baudin O, Clavel M, Chatellier D, Jaber S, Rosselli S, Mancebo J, Sirodot M, Hilbert G, Bengler C, Richecoeur J, Gainnier M, Bayle F, Bourdin G, Leray V, Girard R, Baboi L, Ayzac L, (2013) Prone positioning in severe acute respiratory distress syndrome. N Engl J Med 368: 2159-2168
2. McNicholas B, Cosgrave D, Giacomini C, Brennan A, Laffey JG, (2020) Prone positioning in COVID-19 acute respiratory failure: just do it? Br J Anaesth
3. Bamford P BA, Dean J, Whitmore D, Wilson-Baig N (2020) ICS Guidance for Prone Positioning of the Conscious COVID Patient. London.