“Running a marathon without training”… Hospital course and outcomes of 5 patients admitted with ARDS requiring ECMO

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This case examines 5 patients admitted to Lehigh Valley Hospital with ARDS requiring ECMO. The purpose of this case study is to describe the functional milestones, the outcomes and the adaptations required to rehabilitate these patients.

METHODS

This retrospective case study describes 5 patients (all female, average age 44 +/- 13 years old) admitted with ARDS (2 Influenza A, 2 Influenza A/H1N1, 1 pneumonia). All patients required ECMO support (average 28 +/- 25 days), experienced prolonged mechanical ventilation (average 51 +/- 46 days) and ICU stay (average stay 62 +/- 52 days). Post ECMO, patients demonstrated severely impaired lung function with compliance 16 +/- 5 cm and Pa/FiO2 ratio of 139 +/- 28. Rehabilitation included average of 27 +/- 17 physical therapy (PT) visits.

RESULTS

FSS-ICU rose from average of 2 +/- 1 on the first PT visit post ECMO to 25 +/- 6 on the last PT visit before leaving the ICU. 4 of the 5 patients went home from the hospital (and the fifth went home after a 1 month stay in acute inpatient rehab).

CONCLUSIONS

Patients recovering from ARDS have difficulty achieving textbook weaning values due to the stiffness of the lung and respiratory muscle weakness. In this report, patients had lung compliance about 5% of normal. Delirium/impaired arousal, vital signs outside of traditional accepted ranges and increased work of breathing make initiation of weaning and/or mobility difficult. Interdisciplinary communication set clinical endpoints that allowed progression in weaning as well as initiation of reconditioning through progressive mobility. Individual prolonged weaning plans (see Table 3) were created for each patient and the ICU team agreed that heart rates of up to 150 bpm, oxygen saturation of 85% and respiratory rates of 45 would be acceptable during strenuous activity (see Table 4). In conclusion, knowledge of underlying lung pathology, interdisciplinary communication and early initiation of mobility was crucial to enabling these critically ill patients to progress through their hospital stay and return home.