National University Hospital

SOA21 ULTRASOUND NINJA

intensive care society SOA21 STATE OF THE ART Virtual / 6 – 8 December 2021

Point of Care Ultrasound Alters Critical Care Rehabilitation Trajectory

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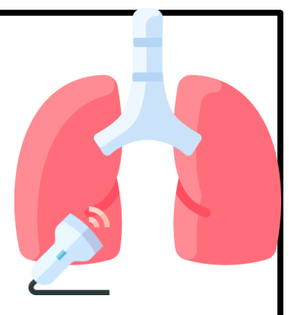
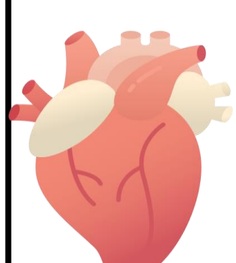
BACKGROUND

The translational impact of point of care lung ultrasound (POCUS) imaging from acute care to hospital discharge in the critical care population through rehabilitation journey is yet to be investigated as physiotherapists have in recent years embraced POCUS as an adjunct assessment tool to chest physiotherapy to deliver targeted rehabilitation [1]. This case study highlights how lung ultrasound imaging performed by a physiotherapist in a critical care unit, was able to detect a subtle clinical condition that altered management of a patient's rehabilitation journey.

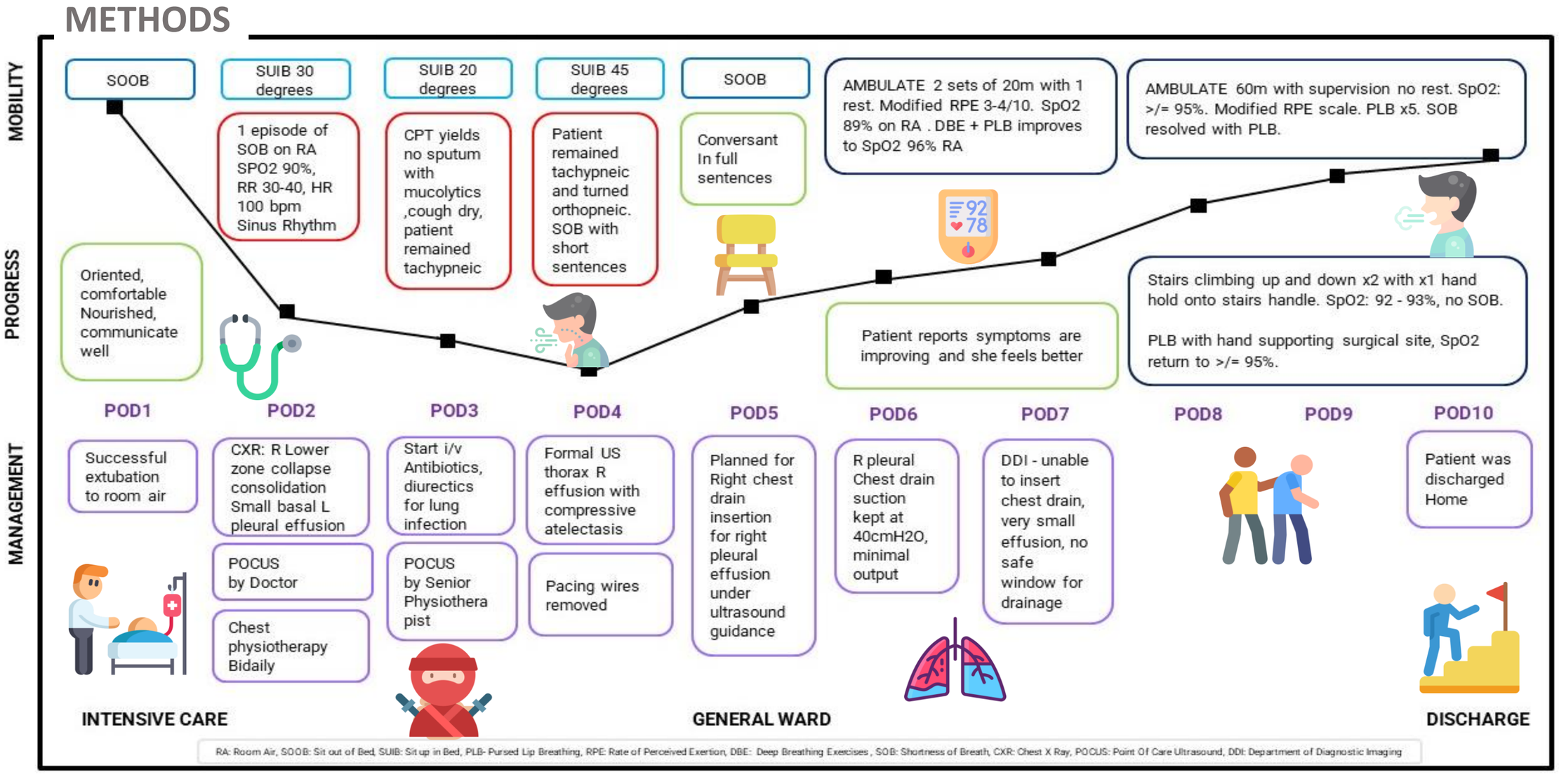


CASE

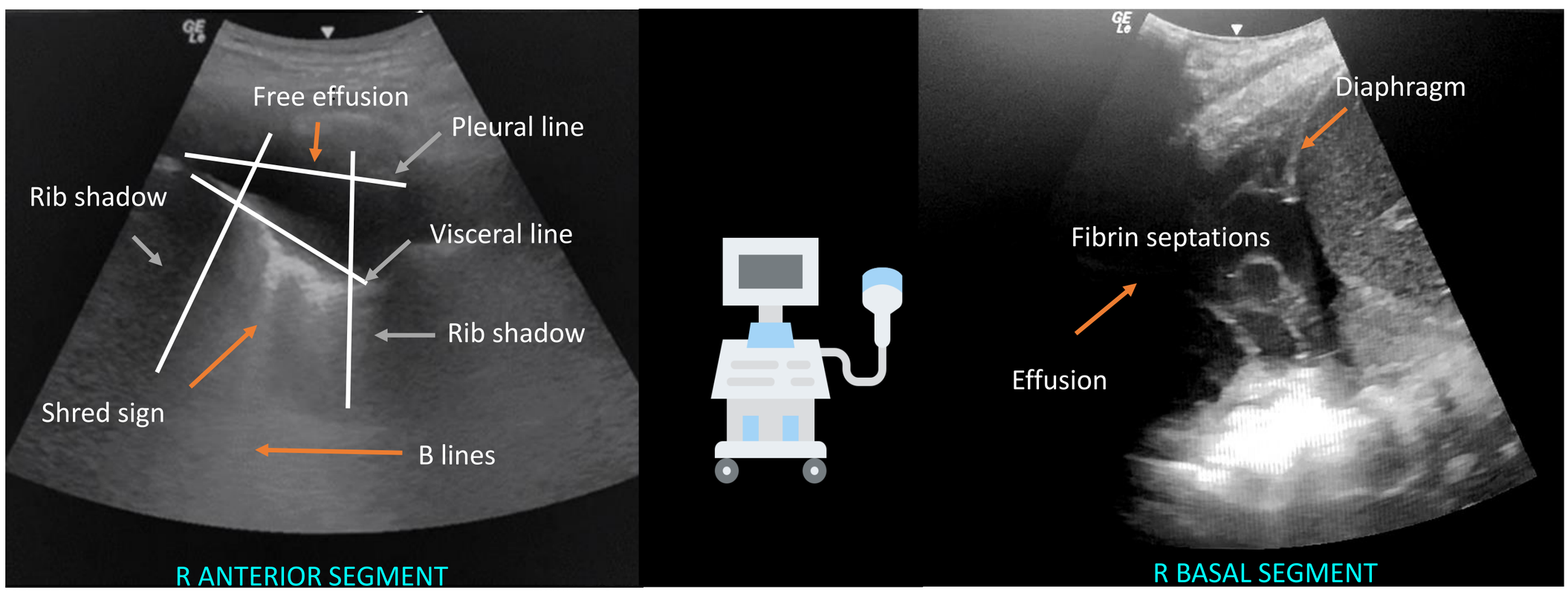


A 44 year old teacher underwent right sided minimally invasive severe mitral valve regurgitation surgery involving mechanical valve replacement of the mitral valve and admitted to Intensive Care. Post-op ejection fraction was 55-60%. FEV1/FVC was 86% predicted. Intraoperatively, pleural and pericardial adhesions and no pericardial effusions were noted. Following a successful cardiac surgery, she quickly developed reduced respiratory capacity that limited her potential for early mobility in intensive care. A senior physiotherapist performed POCUS to assess and manage her rehab potential.

METHODS



FINDINGS



Free effusion was moving and position dependent

Quad sign appeared as pleural effusion is delineated by pleural line, rib shadows and lung line.

Shred sign seen below pleura with jagged border which is partial lobar consolidation/pneumonia

B Lines suggested interstitial fluid

Septated effusion seen due to fibrin strands present in lung effusion.

Reduced diaphragmatic excursion seen due to effusion

CONCLUSION

The POCUS findings in this case scenario provided new insights to the physiotherapist to manage the patient's physical rehabilitation journey where exercise progression was moderated to accept clinical conditions of residual tachypnea with lower saturation to otherwise implementation of conventional manual chest physiotherapy. The rehabilitation trajectory was altered as a result allowing maximal exercise with available respiratory reserves. The clinical significance of point of care ultrasound and its role adjunct to physical therapy treatment, is highlighted in this single case report. Larger studies and randomised controlled trials will confirm clinical value of POCUS in modulating rehabilitation management of a critically ill patient from intensive care to home.

Reference: Ntoumenopoulos G, Hough J. Diagnostic thoracic ultrasound within critical care. J Physiother. 2014 Jun;60(2):112.
Authors declare no conflict of interest.