

Use Of Thoracic Ultrasound By Physiotherapists: A Scoping Review Of The Literature

Simon Hayward, Blackpool Teaching Hospitals Nhs Foundation Trust, Blackpool, Uk - Simon.hayward@Bfwhospitals.nhs.uk

Dr Jessie Janssen, Allied Health Research Unit, University Of Central Lancashire, Preston, UK - Jjanssen@Uclan.ac.uk



PURPOSE

The use of diagnostic thoracic ultrasound (TUS) by physiotherapists to examine the pleura, lung parenchyma and diaphragm is gaining in popularity. In the medical profession it has been shown to have efficacy in the diagnosis of pulmonary conditions such as pneumonia, pleural effusions and diaphragm dysfunction. It is unclear how effective TUS is in the hands of a physiotherapist. The aim of this scoping review is to explore the emerging evidence surrounding physiotherapy use of TUS to inform research and clinical practice.



METHODS

A scoping review was performed to explore and present an overview of the evidence. A systematic electronic search was conducted on multiple databases up until November 2016. Inclusion criteria: primary research reporting the use of diagnostic TUS; a physiotherapist as part of the study design or as the chief investigator; published in the English language. Exclusion criteria: animal or tissue studies. Extracted data included: first author, year of publication, country, sample size, study design, subject population, outcome measures, comparison, profession of US operator and findings.



RESULTS

A total of 3075 papers were identified in the database searches. Twenty six papers were selected: 5 randomised controlled trials, 9 cross-sectional studies, 2 case series, 4 case reports, 5 conference abstracts and 1 audit. Included studies were published between 1997 and 2016. Patient populations investigated included; chronic obstructive pulmonary disease (COPD), critically ill, post-operative upper abdominal surgery, post cerebral vascular accident, spinal cord injury, morbidly obese, adolescents with scoliosis and paediatrics. Twenty three reported on the use of TUS to scan the diaphragm. Three papers involved scanning the pleura and lung parenchyma. All of the early scanning up until 2013 was done by a non-physiotherapist. However, since 2013 eight papers report a physiotherapist as the TUS operator. There have been more papers published about TUS use by physiotherapists in the last three years than in the preceding sixteen.



CONCLUSION

Use of TUS by physiotherapists is an emerging area in regards to both diaphragm and lung diagnostics. Publications are becoming more frequent as



POTENTIAL



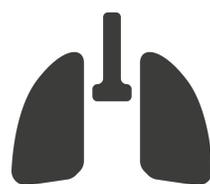
26
PAPERS



SINCE
1997



8
PHYSIO TUS
OPERATOR
PAPERS



COPD AND
CRITICAL CARE

are the number where physiotherapists are performing TUS themselves. A large proportion of the papers looked at the use of TUS to assess the diaphragm as a way to influence physiotherapy practice. This review has demonstrated a lack of research aimed specifically at the use of TUS to assess the pleura or lung parenchyma. Selected papers were heterogeneous in their research questions, participant populations and methodology which makes any generalisability difficult but does show the potential diverse uses of TUS. The evidence suggests that even within this emerging discipline, critical illness and COPD are two popular areas being investigated. The potential of TUS is promising and its impact on patients from diagnosis through to monitoring long term outcomes needs to be explored.

IMPLICATIONS

- Thoracic Ultrasound is gaining popularity amongst physiotherapists.
- More publications involve physiotherapists performing Thoracic Ultrasound themselves.
- Thoracic Ultrasound is being performed by physiotherapists on a broad range of pathologies.

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KEYWORDS

Thoracic ultrasound, physiotherapy, scoping review.

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ETHICAL APPROVAL

Ethical approval was not required for this review.