THE ROLE OF LUNG ULTRASOUND IN THE DIAGNOSIS OF INTERSTITIAL LUNG DISEASE IN CHILDREN WITH DERMATOMYOSITIS

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BACKGROUND

Dermatomyositis is a multiorgan autoimmune disease which is commonly complicated with interstitial lung disease. Chest high-resolution computed tomography (HRCT) is still considered the diagnostic gold standard for interstitial lung disease and its quantification; however, the increasing use of lung ultrasound may play an important role in the future. The aim of our study was to determine the diagnostic value of lung ultrasound in the detection and progression of interstitial pulmonary disease in patients with dermatomyositis.

METHODS

Twenty two subjects with dermatomyositis diagnosed according to the American College of Rheumatology criteria were enrolled (six males, 16 females; mean age: 15.8 ± 8.8 years; range: six to 29 years). All subjects underwent HRCT followed by transthoracic ultrasound for comet tail sign detection and pleural irregularity in order to predict the degree of interstitial lung disease. The modified transthoracic ultrasound assessment was performed at six thoracic regions each side. The Warrick score was calculated according standard high-resolution chest computed tomography images that were evaluated independently from each other by two thoracic radiologists.

RESULTS

A significantly positive correlation between transthoracic ultrasound and the severity of pulmonary involvement, as seen by the number of B lines (Spearman's correlation coefficient = 0.80, $p < 0.001$), and the number of positive areas (regions with more than three B lines; Spearman's correlation coefficient = 0.75, $p < 0.001$) were found. When compared with HRCT of the chest as the gold standard method, the sensitivity, specificity, of transthoracic ultrasound was 96.4 and 83.3% respectively. Additionally, the number of B lines (sum of 35 or more B lines) and number of B lines positive areas (seven or more regions with at least three B lines) cut of allowed to discriminate the inflammatory pattern (ground glass) to those with structural pattern (honeycomb and pulmonary cysts).

CONCLUSION

Our study showed that transthoracic ultrasound comet tails scoring system could be useful in the assessment of the pulmonary involvement in patients with dermatomyositis, and should be considered as a primary screening exam to exclude lung involvement, rather than routine chest CT scans in asymptomatic patients.

KEYWORDS

Dermatomyositis, Interstitial lung disease, Chest high-resolution computed tomography.