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NEW PERSPECTIVES IN DIAGNOSIS OF INTERSTITIAL LUNG DISEASE RELATED TO RHEUMATOID ARTHRITIS. VALIDATION STUDY OF AN ELECTRONIC STETHOSCOPE AND AD HOC SOFTWARE FOR DETECTION OF PULMONARY CRACKLES

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Background: Rheumatoid arthritis (RA) is a chronic inflammatory disease characterized by synovial joint swelling and tenderness, secondary to the immune-system dysfunction, often complicated by extra-articular manifestations. Among them, lung involvement is very frequent and interstitial lung disease (ILD) represents one of the deleterious complications of RA with impact on both therapeutic approach and overall prognosis. Nevertheless, diagnosis of ILD often remains missing or delayed.

Objectives: To preliminarily evaluate the predictive value of pulmonary sound recorded by an electronic stethoscope (ES) and elaborated by an ad hoc software in identification of RA-ILD diagnosed by mean of high resolution computed tomography (HRCT) in a multicenter study.

Methods: RA patients who underwent HRCT in the last 12 months were enrolled. They were all auscultated with the ES (Littmann 3200^{TM} 3M, USA), bilaterally, at dorsal level, in at least 3 pulmonary fields (medium and basal). All tracks recorded were analyzed by a suitably developed software capable of recognizing pathological crackles in lung sounds. Results were compared with radiologic findings detected in a blind manner by an expert radiologist.

Results: One hundred and six RA patients were enrolled (M/F: 1/2.5, mean age 68.7±10.3); among them 45 (42.5%) showed ILD at HRCT. Three patients were excluded because of a low quality of the sound recorded. The algorithm showed a sensitivity and specificity of 72.1% and 84.4%, respectively and a positive/negative predictive value of 69.1% and 86.3%, respectively.

Conclusions: Despite preliminary, these data suggest an important role of ES in clinical practice for an early diagnosis of ILD in RA patients and a significant reduction of inappropriate prescription of HRCT. Since very different types of ILD can occur in course of RA, with different radiologic features and localization, proper development of the measurement setup (ES and ad hoc software for the detection of PC) could further increase its predictive value, in particular to avoid incorrect records and misdiagnosis. The routinely employment of ES and proper software, combined to clinical findings (cough, dyspnea) and respiratory lung function, could increase our ability to early identify ILD in RA patients.

Disclosure of Interest: None declared