

# Lung ultrasonography results statistically agrees with computed tomography in estimates of COVID-19 pneumonia extent

Jonas Michel Wolf<sup>1</sup>, Luiz Carlos Pallarés<sup>1</sup>, Ana Zanardo<sup>1</sup>, and Vinicius de Souza<sup>1</sup>

<sup>1</sup>Hospital Moinhos de Vento

February 14, 2023

## Abstract

**Objectives:** Despite its low sensitivity for the interstitial syndrome, chests X-Ray (XR) have been used on COVID-19 patients to exclude alternative diagnoses. Computed tomography (CT) scans can both exclude other pathological conditions and display a high level of sensitivity for the COVID-19 pneumonia. We therefore decided to compare the performance of lung ultrasonography (LUS) with that of lung CT scans in suspect or confirmed COVID-19 patients for the presence of interstitial pneumonia and the degree of lung injury. **Methods:** In a cross-sectional clinical study, LUS an CT were compared for the presence of interstitial pneumonia and the degree of lung injury in COVID-19 patients. Pearson's and Spearman correlations analysis were performed to measure the degree of association between two methods. Bland–Altman plot was generated to provide a graphical visualization of the agreement between the two measurement methods. All statistical tests in this study were two-sided and  $p$ -values  $[?] 0.05$  were considered as statistically significant. **Results:** A good correlation between LUS and CT scan was obtained for estimates of lung injury in pneumonia in a group of COVID-19 suspect and diagnosed patients ( $R^2 = 0.7613$ ;  $p < 0.01$ ). Agreement between LUS and CT values is assessed by constructing Bland-Altman plot. **Conclusions:** LUS, as compared to CT scans, is an effective method to estimate degrees of lung injury in COVID-19 patients in the emergency department.

## Hosted file

Manuscript.docx available at <https://authorea.com/users/586053/articles/624366-lung-ultrasonography-results-statistically-agrees-with-computed-tomography-in-estimates-of-covid-19-pneumonia-extent>

## Hosted file

Figures.docx available at <https://authorea.com/users/586053/articles/624366-lung-ultrasonography-results-statistically-agrees-with-computed-tomography-in-estimates-of-covid-19-pneumonia-extent>

## Hosted file

Table 1.docx available at <https://authorea.com/users/586053/articles/624366-lung-ultrasonography-results-statistically-agrees-with-computed-tomography-in-estimates-of-covid-19-pneumonia-extent>