Title

Different measurements of cardiac shadow in HRCT can differentiate COPD from 'normal' patients.

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Background

Dimensions of different heart chambers and great vessels may be influenced by lung diseases. Understanding those changes in CT scan may appear useful.

Methods

Cardiac structures including total cardiac shadow (TCS), area of fat (FL), Left Atrium (LA), Right Atrium (RA), Descending Aorta (DA) were measured by 'ImageJ' at three levels in transverse sections of the mediastinal window (hila, right pulmonary artery drainage point, and at the maximum dimension of RA). The average of measurements was noted for calculation. CT scan of COPD and normal 'surrogates' (clinically having no active lung diseases) are taken. Different areas and their ratios were captured between two groups.

Results

We included normal 'surrogates' ($n = 19$) & COPD patients ($n = 30$) having increased dimension of DA (1040.105 ± 27.213 vs. 1412 ± 88.374; $P = 0.0000 \ldots 292$), LA (2874.053 ± 222.737 vs. 5173.133 ± 531.412; $P = 0.0000 \ldots 299$), RA (1428.684 ± 164.305 vs. 4870.267 ± 1007.289; $P = 0.0000 \ldots 299$), TCS (9402.737 ± 751.386 vs. 17329.533 ± 1360.238; $P = 0.0000 \ldots 299$), FL (1661.421 ± 201.874 vs. 3092.667 ± 685.181; $P = 0.0000 \ldots 542$), TCS/DA (9.041 ± 0.712 vs. 12.294 ± 0.922; $P = 0$), LA/DA (2.761 ± 0.174 vs. 3.677 ± 0.435; $P = 0.0000 \ldots 892$), (TCS-LA)/DA (6.28 ± 0.735 vs. 8.617 ± 0.837; $P = 0.0000 \ldots 664$)

Conclusion

Cardiovascular measurements in CT chest vary in normal surrogates and COPD. This area needs more research to identify COPD specific morphological characteristics.