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SUPPLEMENTARY MATERIAL

Appendix

For quantitative assessment of the Erector Spinals Muscles, we performed the analysis on a single-slice axial chest CT image at the level of the lower margin of the 12th thoracic vertebra, as described in the article cited above [Tanimura K, et al Ann Am Thorac Soc. 2016;13(3):334-41]. We measured both CT-measured erector spinae muscle area and density. From the initial sample of 370 patients, we were able to obtain this radiological information in 336 patients (37 patients could not be used). In this analysis (Table 1), both ESM area and density were associated with all-cause mortality, as previously described. In the multivariable analysis (Table 2), ESM area was associated with mortality, along with age and the BODE index.

Table 1.

Univariable analysis exploring factors that predict survival		
Variables	HR (95% IC)	p value
Age* (for each year)	1.08 (1.05 – 1.10)	<0.001
Pack-year (for each pack-year)	1 (0.99 – 1.01)	0.097
BSA	1.12 (0.32 – 3.89)	0.857
BMI (body mass index)	1.00 (0.96 – 1.04)	0.99
Gender (male as reference)	0.62 (0.35 – 1.08)	0.09
Current Smoker (yes vs. no)	1.69 (0.23 – 12.43)	0.61
FEV1%* (for each %)	0.98 (0.97 – 0.99)	<0.001
MMRC* (for each point)	1.30 (1.09 – 1.54)	0.003
6MWD* (for each m)	0.995 (0.994 – 0.997)	<0.001
Exacerbations	1.73 (0.98 – 3.05)	0.056
BODE* (for each point)	1.19 (1.09 – 1.31)	<0.001
ESM area*(for each cm2)	0.96 (0.93 – 0.99)	0.014
ESM index (for each cm2/m2)	0.89 (0.78 – 1.01)	0.079
ESM density* (for each HU)	0.98 (0.97 – 0.99)	0.007

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Table 2.

Multivariable analysis exploring factors that predict mortality		
Variables	HR (95% IC)	p value
Age* (for each year)	1.07 (1.03 – 1.11)	0.001
Gender (male as reference)	1.65 (0.83 – 3.27)	0.152
Pack-year (for each pack-year)	1.00 (0.99 – 1.01)	0.399
BMI	1.02 (0.97 – 1.07)	0.480
BODE* (for each point)	1.11 (1.01 – 1.24)	0.041
ESM area* (for each cm2)	0.95 (0.91 – 0.99)	0.006
ESM density (for each HU)	0.99 (0.98 – 1.01)	0.558

Having confirmed the previous findings of Tanimura and coworkers, we then explored the important issue of whether information from analysis of the psoas muscles differed from that of the ES. This we completed in the 220 patients where both muscles could be analyze and we obtained the results shown in Table 3:

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Table 3.

Multivariable analysis exploring factors that predict mortality		
Variables	HR (95% IC)	p value
Age* (for each year)	1.07 (1.03 – 1.11)	0.001
Gender (male as reference)	1.81 (0.70 – 4.69)	0.224
Pack-year (for each pack-year)	1.00 (0.99 – 1.01)	0.414
BMI	1.02 (0.95 – 1.09)	0.558
BODE (for each point)	1.05 (0.91 – 1.21)	0.533
ESM area (for each cm2)	0.96 (0.91 – 1.02)	0.151
ESM density (for each HU)	1.03 (0.99 – 1.06)	0.071
Psoas density* (for each HU)	0.95 (0.92 – 0.99)	0.005

As you can see, CT-assessed PsD was independently associated with mortality, whereas ESM area or density was not.