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Duro-Ocana, Pablo, Bryan, Angella, Quraishi-Akhtar, Tanviha, Parker, Michael, Moore, John, Zambolin, Fabio ORCID logo ORCID: <https://orcid.org/0000-0002-4178-6965>, Degens, Hans ORCID logo ORCID: <https://orcid.org/0000-0001-7399-4841>, Siriwardena, Ajith K and Bagley, Liam ORCID logo ORCID: <https://orcid.org/0000-0001-5538-0870> (2023) High ventilatory inefficiency with low psoas muscle index is associated with an increase in the risk of 3-year mortality after liver resection and pancreaticoduodenectomy. In: RA-UK Annual Scientific Meeting 2023, 04 May 2023 - 05 May 2023, Newcastle, UK.

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# HIGH VENTILATORY INEFFICIENCY WITH LOW PSOAS MUSCLE INDEX INCREASE THE RISK OF 3-YEAR MORTALITY AFTER LIVER RESECTION AND PANCREATICODUODENECTOMY

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Body composition assessed with computed tomography (CT)<sup>1</sup> images and cardiopulmonary exercise fitness (CPET)<sup>2</sup> of liver resection or pancreaticoduodenectomy patients show promising value to prognose surgical outcomes. The combination of CT and CPET may better predict patients' survival rate after surgery than these techniques independently.

This is a retrospective study that collected abdominal CT images and CPET measures of liver resection or pancreaticoduodenectomy patients from the CPET NHS Manchester Foundation Trust research databases. Abdominal CT images were segmented based on Hounsfield Units and CPET was performed until volitional exhaustion. Parameters derived from abdominal CT image analysis at L3-L4 were psoas muscle index (P-index), calculated as psoas muscle cross-sectional area (tissue at -29 to 150 Hounsfield units [HU])/height<sup>2</sup>, and psoas intramuscular adipose tissue (tissue at -190 to -30 HU). CPET parameters were maximum volume of oxygen consumption, anaerobic threshold and ventilatory equivalents of CO<sub>2</sub> (VE/VCO<sub>2</sub> slope). Cox regression identified CT- and CPET-derived parameters with a significant relationship with 1- and 3-year survival rate. After, Patients were classified into two groups based on the median value of the CT or CPET parameters related with 1- or 3-year survival rate. The 1- and 3-year mortality Hazard Ratios (HRs) of the two groups were calculated using Cox regression.

Overall, 89 patients (57 men and 32 women, 70 [64-74] years old) were included. P-index (HR [95%CI]: 0.830 [0.699-0.984], p=0.032) and VE/VCO<sub>2</sub> slope (HR [95%CI]: 1.041 [1.012-1.070], p<0.01) correlated with 3-year survival rate. Those patients with low P-index (men <7.5 cm·m<sup>-2</sup> and women <5.9 cm·m<sup>-2</sup>) and high VE/VCO<sub>2</sub> slope (>32.1) showed a higher risk of 3-year mortality (HR [95%CI]: 2.471 [1.292-4.723], p<0.01).

The combined used of CT images and CPET analysis better prognosed the risk of 3-year mortality after pancreaticoduodenectomy and liver resection than the use of CT and CPET independently.

## REFERENCES

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