Novel gas exchange analysis in COVID-19 lung disease

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Shareable abstract (@ERSpublications)
A new method of measuring mean alveolar P_{O_2} and P_{CO_2} (as opposed to the classical ideal alveolar air analysis) with arterial P_{O_2} and P_{CO_2}, is applied to patients with COVID-19 lung disease, acutely and after recovery https://bit.ly/3Tuaffb

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The study by HARBUT *et al.* [1] reported in this issue of the *European Respiratory Journal* analyses gas exchange in patients with acute coronavirus disease 2019 (COVID-19) lung disease; arterial oxygen and carbon dioxide tension (P_{O_2} and P_{CO_2}) and the mean (or mixed) value for alveolar ($\bar{A}$) P_{O_2} and P_{CO_2} (not an "ideal" [2] but the actual value) were measured, when patients (and healthy controls) were breathing air. From the mean alveolar to arterial P_{O_2} and arterial to mean alveolar P_{CO_2} gradients ($\bar{A}aP_{O_2}$ and $a\bar{A}P_{CO_2}$), the authors computed intrapulmonary shunt and alveolar dead space using the classical three compartment model of RILEY and COURNAND [2] (but, with important differences: see later). HARBUT *et al.* [1] argued that intrapulmonary shunt should be a marker for alveolar consolidation, as in lobar pneumonia, but at a more microscopic level; alveolar dead space, on the other hand, should be a surrogate for pulmonary microvascular obstruction and thrombosis, *e.g.* following severe endothelial injury.