

IMAGING IN INTENSIVE CARE MEDICINE

SARS-CoV-2 in carotid body



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A 42-year-old man was admitted to the intensive care unit in October 2020 for coronavirus disease-19 (COVID-19)-related acute respiratory distress syndrome requiring mechanical ventilation. He presented with multi-organ failure and died 41 days later. Comorbidities included a sleeve gastrectomy in 2016 and cholecystectomy in April 2020.

Autopsy revealed diffuse alveolar damage (Fig. 1A) and presence of severe acute respiratory syndrome-coronavirus 2 (SARS-CoV-2) in the carotid body (Fig. 1B, C). Detection of SARS-CoV-2 in the carotid body was performed by real-time reverse transcription polymerase chain reaction (Fig. 1D).

The carotid body plays a role in peripheral arterial chemoreception, in metabolic and immune sensing, and could also be a route of nervous system invasion by SARS-CoV-2. Involvement of the carotid body by SARS-CoV-2 may explain silent hypoxemia and thus could also contribute to increased morbidity and mortality in COVID-19 patients.

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Compliance with ethical standards

Conflicts of interest

The authors declare that they have no conflict of interest.

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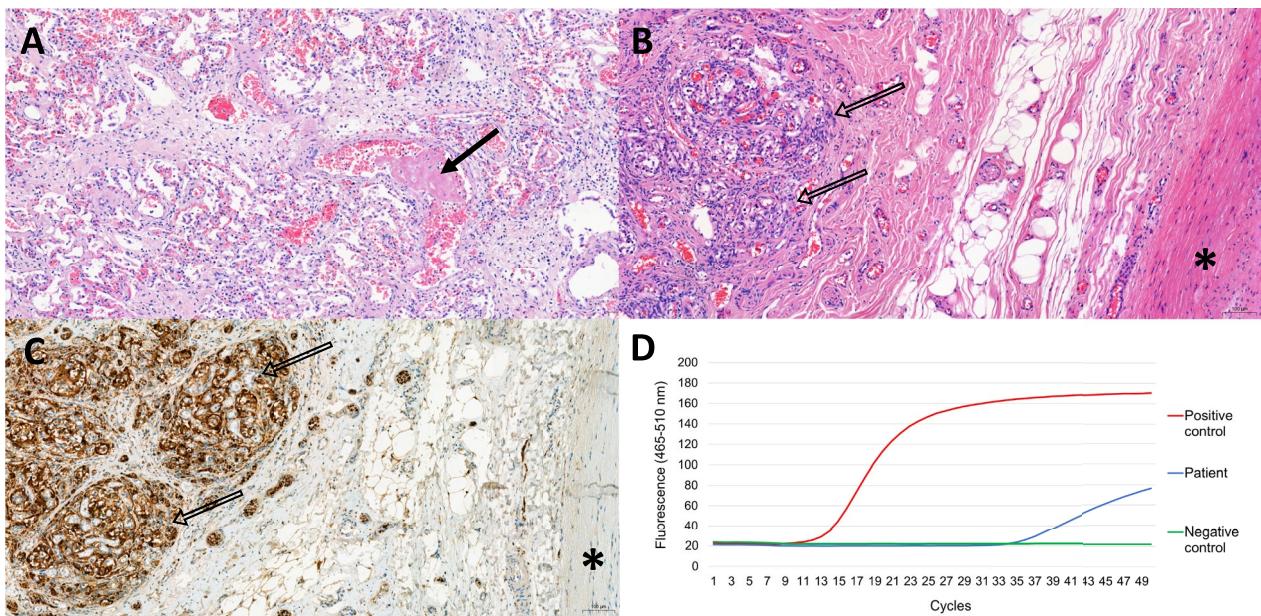


Fig. 1 **A** Post-mortem tissue specimen showing a diffuse alveolar damage and a partially occluded microvascular structure in the lung (arrow) (hematoxylin eosin; $\times 100$); **B** lobules of the left carotid body (open arrows) separated by thin connective tissue septa and located in close proximity of a muscular artery wall structure (asterisk) (hematoxylin eosin; $\times 100$); **C** immunohistology with an antibody against S-100 protein demonstrating many immunostained sustentacular and Schwann cells surrounding neuroendocrine chief cells within the lobules (open arrows) (immunoperoxidase; $\times 100$); **D** real-time reverse transcription polymerase chain reaction using the Taqman® technology on LC480 thermocycler (Roche, Switzerland) and showing detection curves (blue curve for patient tissue; red and green curves for positive and negative controls, respectively) of severe acute respiratory syndrome-coronavirus 2 N1/N2 gene transcripts (cycle threshold: 36) after glomus tissue microdissection and RNA extraction from paraffin-embedded sections (tested in triplicate)