J Bras Pneumol. 2023;49(6):e20230392
https://dx.doi.org/10.36416/1806-3756/e20230392

Subsolid nodules, adenocarcinomas, and COVID-19: looking for needles in a haystack

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By November 2023, the World Health Organization had counted over 770 million confirmed cases of COVID-19.[1] Given that chest CT played a relevant role in the management of these patients during the pandemic, we can at best assume that tens of millions of CT scans were performed during that period. Even if the reasons were unrelated from the perspective of oncological imaging, that might have been the largest opportunistic screening of lung neoplasms to date.

In this sense, the study by Zanardo et al.[2] sheds light on a relevant issue that involves the differential diagnosis of subsolid lung nodules (SLNs) and the current knowledge about the morphology/evolution of adenocarcinomas on CT. Although not statistically significant, a tendency toward a reduction in the diagnosis of SLNs was demonstrated in the sample collected during the COVID-19 pandemic when interpreted by a thoracic radiologist. This fact is explained by the morphological similarity between persistent lesions that present as SLNs and transient lesions related to SARS-CoV-2 on CT, highlighting the possibility of neoplastic changes, especially lesions in the spectrum of adenocarcinomas. If we imagine a real-life scenario during the pandemic, some factors might have potentially complicated the underdiagnosis of persistent SLNs. First, during that period, radiologists were exposed to a disproportionate number of chest CT scans for evaluation, with demands for rapid responses to be included in medical reports, which certainly reduced interpretation time and might have influenced the detailing of some of these lesions.[3] Second, with the increased demand, radiologists with different levels of experience in thoracic imaging (and therefore familiarity with SLN interpretation) were called upon to interpret these exams.

Important studies on the morphological diagnosis of lung adenocarcinomas were published in the 1990s, notably the one by Noguchi et al.,[4] correlating the morphological (histopathological) appearance and prognosis of small lung adenocarcinomas. Knowledge on the morphology and evolution of these tumors on CT derived from those studies, and persistent SLNs (semisolid or purely ground glass) began to be recognized for their neoplastic potential.[5] It is worth emphasizing that the differential diagnosis of SLNs is broad in transient lesions, including inflammatory and infectious changes (including COVID-19) and focal hemorrhage, whereas it encompasses interstitial fibrosis, organizing pneumonia, endometriosis, and neoplasms (including changes in the spectrum of adenocarcinomas, lymphoproliferative disorders, and, less commonly, secondary neoplastic implants) in persistent lesions.[6]

Although the morphological semiology of SLNs on CT is limited in differentiating between benign lesions and neoplasms (especially adenocarcinomas), persistent lesions presenting specific findings such as spiculations, internal lucencies, vascular convergence, coarse interface but well-defined with the adjacent parenchyma, and pleural retraction should suggest malignancy.[7] Current protocols for the diagnostic management of SLNs by the Fleischner society[8] recommend that morphological elements (purely ground-glass or semi-solid lesions), their size, and multiplicity should be combined for follow-up suggestions, and such lesions should often be monitored for long periods of time to evaluate their behavior.

The female population deserves special attention, and in the study by Zanardo et al.[2] they more often detected SLN in women regardless of COVID-19 status. A trend toward an increase in the frequency of lung neoplasms in the female population has been demonstrated in several countries, and mortality from lung neoplasms is expected to exceed mortality from breast neoplasms in the future.[9] Furthermore, some screening studies have shown a greater benefit in the reduction in lung neoplasm mortality in women, with an emphasis on a study in which the reduction in specific lung cancer mortality was 24% in men and 33% in women.[9,10]

We thus return to the point of the countless chest CT studies carried out around the world during the challenging period of the COVID-19 pandemic. We need to reflect that, given the morphological similarity between lung changes caused by SARS-CoV-2 and lesions in the spectrum of adenocarcinomas, some of the latter might not have been readily recognized. Prospectively, it is worth reinforcing to the radiological community the importance of careful comparative analysis of current chest CT scans with any previous exams during that period for retrospective diagnosis and adequate management of those lesions.

AUTHOR CONTRIBUTIONS

The authors equally contributed to this editorial.

CONFLICTS OF INTEREST

None declared.

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ISSN 1806-3756

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