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## Differential diagnosis of pulmonary nodules presenting on cancer patients

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Pulmonary nodules (PNs) presenting on cancer patients are frequently presumed to represent metastases. However, primary lung cancers, infections, scar tissue, and auto-immune diseases are among the possibilities in a wide range of differential diagnosis. The decision of performing a PN biopsy in a cancer patient is challenging, due to data scarcity. On retrospective studies and case series, the frequency of benign lesions and second primary lung tumors in cancer patients submitted to a PN biopsy is as high as 42%. A pivotal study published in 2016 demonstrated that, among 228 patients with tumors other than lung cancer, the frequency of non-metastatic lesions on biopsy was 36%. Interestingly, on this study, the presence of multiple PNs and signs of cavitation or necrosis at the PN on computerized tomography (CT) were associated with higher odds of metastatic disease. The scope of this presentation is to perform a review of the most recent medical literature about PNs arising on cancer patients. Also, the real challenge that clinicians face on their daily practice will be addressed by two case reports illustrated with its respective CTs and biopsies. PNs should not be assumed to be metastases without performing a biopsy, given the high frequency of non-metastatic lesions observed among cancer patients. Whenever feasible, tissue sampling is crucial for a precise diagnosis.

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## Technological platforms for stem cell lines characterization and control: The importance to evaluate cell line variations

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The stability of pluripotent stem cells depends on intrinsic (genetic background, mitochondrial fitness and selective pressure) and extrinsic factors (extracellular matrix, medium composition, passaging techniques, freezing and thawing techniques and oxidative stress) these can determine microdeletions, point mutations, genetic instability, karyotype abnormalities, epigenetic changes which ultimately lead to altered behavior including differentiation and tumorigenic potential. There is a great necessity to qualify the stem cells in order to fulfill results reproducibility. This can be achieved by creating technological platforms to evaluate systematically cell line variations, their characterization and behavior control.

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