Reviewer’s report

Title: A case of synchronous bilateral lung cancers: EML4-ALK positive adenocarcinoma in the right lung and bronchioloalveolar carcinoma in the left lung

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Reviewer: Aurélie Cazes

Reviewer’s report:

In this manuscript, the authors reported a case of synchronous bilateral lung cancers harbouring different EML4-ALK status. This is an interesting case report that could have clinical consequences, but need some revisions to improve its educational value.

Major concerns:
- The main interest of this case report is to emphasize the possibility that synchronous cancers harbour different genetic alterations and thus the need to document the tumours, if not on a first intention basis, anytime the clinical evolution under targeted treatment seems unusual. I think that this point is not enough emphasized by the authors. Particularly in this case, if any metastasis occur, how will the patient be treated?
- I value the fact that the authors have tried to do some correlations between histopathological aspects and genetic alterations, but one has to keep in mind that all the ALK rearranged adenocarcinomas are not of the mucinous cribriform histology, and that screening for ALK fusion should not be restricted to such histology. I think the last sentence is somewhat misleading.
- The authors never discuss the issue of tumoral heterogeneity in lung cancers both in primary and in primary versus metastasis. Moreover it would be interesting to see a larger picture of the ALK staining, showing how diffuse or multifocal it is.
- The authors should try to adopt the new proposed classification for adenocarcinomas (cited reference 2), notably it is recommended that the term “bronchioloalveolar carcinoma” is abandoned or use with the term “former”

Minor revisions
- Data concerning epidemiology of the ALK re-arranged carcinomas are just emerging and there are conflicting data concerning the sex-ratio (cf introduction).
- The authors could have tested both tumors for EGFR mutations (some tumors harbour both ALK and EGFR alterations)

Level of interest: An article of limited interest

Quality of written English: Acceptable
Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
I declare that I have no competing interests