Reviewer's report

**Title:** Blastomatoid pulmonary carcinosarcoma: report of a case with a review of the literature

**Version:** 1  **Date:** 16 August 2012

**Reviewer:** Florian Laenger

**Reviewer's report:**

**Summary**
The authors describe the clinical, morphological, immunohistochemical and genetic characteristics of the blastomatoid variant of a pulmonary carcinosarcoma. They conclude that the presence of beta-catenin mutations helps to differentiate between morphologically similar tumors as biphasic pulmonary blastomas and the blastoid variant of pulmonary carcinosarcomas. Aberrations regarding TP53, MDM2 and the lack of EGFR and KRAS mutations are not deemed helpful, as MDM2 amplification may be found in both entities. In addition to previously published CGH data mentioning gains in 1q and 8q as well as losses in 5q, the authors describe other changes esp. regarding 12q13q21 (already described in sarcomas), 15q24qter (previously described in small cell cancer), 20q11q12 (described in breast cancer).

**Major Compulsory Revisions**
1) rather extensive molecular work has been already done, CGH and/or CISH data of the two distinct components of the tumor would be very interesting regarding molecular tumorigenesis and possibly improve the diagnostic value of the molecular data for small biopsies
2) histological description of the tumor does not accurately mention the most salient diagnostic features of pulmonary carcinosarcomas regarding both components and is sometimes misleading:
   - nuclear atypia per se does not indicate high grade fetal adenocarcinoma as indicated in the text, but the branching (immature) architecture of glands (fig. 2A) which are composed of columnar cells with palisading elliptic nuclei with subnuclear vacuoles (fig. 2B)

**Minor essential revisions**
1) partial rhabdomyosarcoma-like differentiation is mentioned, please specify the percentage of mesenchymal tumor cells expressing desmin and myoD1
2) morules in blastomas are of epithelial origin and differentiation, thus they should not be mentioned in the context of mesenchymal components as this might be misleading
3) check wording and language, e.g. “expression …. was not expressed”
4) I personally would discourage statements as “TP53 mutation was detected
immunohistochemically”, as IH is a rather unspecific surrogate marker for mutations in this context.

5) there are divergent statements regarding the gain of chr 12 (12q14q21/12q24 and 12q13q21/12q12q21

6) analysis of SYT-SSX fusion gene is mentioned, but the reason for this analysis, which is to exclude synovial sarcoma (as another biphasic tumor) is omitted

7) other potential differential diagnoses are not mentioned, e.g. synovial sarcoma, teratoma etc.

Discretionary Revisions

1) the characteristics of the blastomatoid variant pulmonary carcinosarcoma in comparison to conventional carcinosarcoma are given in table 1, they should be highlighted in the text also, esp. as this variant is not officially recognized in the current WHO classification

**Level of interest:** An article whose findings are important to those with closely related research interests

**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.