Reviewer's report

Title: Resistance gene expression determines the in vitro chemosensitivity of non-small cell lung cancer (NSCLC)

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Reviewer: Yataro Daigo

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This manuscript tests the hypothesis that the molecular basis of the in vitro chemosensitivity of NSCLC lies within the known resistance mechanisms inherent to the patients’s tumors. The authors examine chemosensitivity of a series of 49 NSCLC tumors using the ATP-based tumor chemosensitivity assay (ATP-TCA) and compare with quantitative expression of resistance genes measured by RT-PCR following extraction of RNA from formalin-fixed paraffin-embedded (FFPE) tissue. They show strong correlation of multi-gene signatures for many of the single agents and combinations tested. The authors conclude that genes involved in known mechanisms drug sensitivity and resistance correlate well with in vitro chemosensitivity and may allow the definition of predictive signatures for personalized chemotherapy in lung cancer.

Comments

This type of in vitro test should be useful when applied to appropriate setting and quality of clinical samples. The paper is generally written and suitable for publication, pending that the following points be promptly addressed.

1. It should be clarified how many proportion of tumor cells in tumor tissues are required to obtain reliable results by their in vitro assay.

2. Current gene expression profile reports demonstrated that the molecular signature of lung adenocarcinomas (ADC) are significantly different from that of lung squamous cell carcinomas (SCC). Subgroup analysis concerning ADC and SCC using the same statistical methods in this paper should be reccomended. Or the evidence should be presented to justify their results of limited known genes obtained by use of the NSCLC data should be directly applicable to these histological subgroups.

Level of interest: An article of importance in its field

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.