Reviewer's report

Title: GLUT1 gene is a potential hypoxic and prognostic marker in colorectal cancer patients

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Reviewer: Cornelis Sier

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The manuscript ‘GLUT1 gene is a potential hypoxic and prognostic marker in colorectal cancer patients’ by Chung et al. describes the study investigating the correlation between hypoxia- and glycolysis related genes and the clinical prognosis in colorectal cancer (CRC) patients in Taiwan (# major aim out of introduction) and to discover a molecular marker that could be used to determine the hypoxia level of peripheral circulating cancer cells in cancer patients blood (# aim stated in introduction).

This interesting subject is investigated at three levels, i.e. in CRC cell line cultures and in tissue and peripheral blood of CRC patients. Unfortunately the experiments/results are fragmentally presented:

1) lactate, HIF-1#, GLUT1 expression in CRC cell lines under hypoxia.
   The choice for exactly these parameters is not clear and could/should follow from the results in
2) expression of 16 glycolysis- and hypoxia-associated genes in CRC tissue specimens.
3) expression of 7 glycolysis- and hypoxia associated genes in blood

If the cell line data were meant to support the clinical data, they should either be given afterwards, as a confirmation for GLUT1 in comparison with HIF-1#, OR alternatively, if meant to precede the clinical data, at least all 16 parameters should be investigated to explain the choice made by the authors to focus on GLUT1.

The tissue data are interesting but the numbers (n=10) are just enough to indicate GLUT1 as being enhanced. Any conclusions about the stage of the disease should be avoided. The peripheral blood data are not discussed, which makes it difficult to understand how GLUT1 could be used as prognostic marker in CRC, as proposed by the authors in the title.

In conclusion, although the data from this study indicate a correlation of GLUT1 with hypoxia, the overall manuscript makes a too preliminary impression to be presented as a full paper in BMC Cancer.

Minor remarks:
- The number of tissues (n=10) is too small to make statistical comparisons between subgroups.
- The description of the peripheral blood preparation is missing. It is not clear how over expression is defined for the blood analyses (are there control samples determined?).

- It is not completely clear whether the ‘paired normal tissues’ are derived from the patients or from healthy controls (see page 17 ((10 healthy persons) and Legend Figure 5 (healthy control), please indicate this better.

- Presumably the medians mentioned in the Tissue and blood sample section of the Materials & Methods should be means?

- Table 4: The calculation of the percentage overexpression (column 12) is unclear.

- Data of uPA are missing in table 5. The legend should specify that the source is peripheral blood.

- The relevance of the lactate measurements should be indicated/integrated more clearly in the manuscript.

- SW480 and SW620 are derived from the same patient, but SW620 is not a primary tumor. Instead of mentioning the Dukes stage of these cell lines, the UICC stage should be used (or vice versa), if that was the purpose of the comparison with the tissues.

- References: Names of Journals should be in capitals, e.g. Cancer Research

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

**Quality of written English:** Needs some language corrections before being published

**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.