Reviewer’s report

Title: Comparison of Contrast in Brightness Mode and Strain Ultrasonography of Glial Brain Tumours

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Reviewer: Claudia Sciallero

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This article investigates the differences in image contrast between tumor and normal tissue considering two ultrasound imaging modalities, i.e. ultrasound strain imaging and B-mode imaging. The study is focused on the processing of data acquired during surgery of glial tumors and the calculation of a quantitative parameter useful to compare the performance of the two imaging techniques. The manuscript is interesting and well written but needs some refinements before publication. Specifically, the “Background” may need to be rearranged, in “Methods” a small part may be re-written to be clearer for the reader and “empty” or unquantified adjectives like high, poor, various, etc. have to be quantified or described.

Following is the list of my comments:

Major revisions:

1. “Background”:
   After the first paragraph (“Prior to modern”……”referred to as ultrasound elastography”), the manuscript might perhaps be improved with a different organization:
   1. General view of the field (short): different clinical situations where ultrasound elasticity have been applied.
   2. Strain imaging in breast tumors (a widely investigated application, many works had evaluated the clinical performance of ultrasound strain imaging).
   3. Ultrasound elastography in imaging brain tumors (only few works in literature and the topic of the study)
   4. The aim of the study and the organization of the paper.

2. “Methods”
   The paragraph “The B-mode and strain magnitude…at user-selected depth” is not particularly clear. Please, you may consider the caption of figure 1: the description is clearer than that reported in the text. In addition, when you are dealing with figure 1 in the text, it might be useful to indicate if you are describing figure 1 A, B, C or D.

3. Unquantified adjectives:
In “Background”:
- Second paragraph (“Several research groups..”): “..images of various tumors and have mainly demonstrated different technical approaches” What kind of tumors? And what are the different approaches? (in the second case you can add references without an explanation).
- In the paragraph starting with “these and other studies indicate..”: “Even with a high signal-to-noise ratio….poor contrast resolution”, can you add numerical values? (related to “high” and “poor”).

4. In “Discussion”:
Second Paragraph: “The processing is also prone to decorrelation artifacts caused by very low signal level..”, it possible to quantify the “low signal level”?

Minor essential revisions:
1. Abstract (Background): I suggest to substitute “Ultrasound imaging of strain..” with “Ultrasound imaging of strain is an image modality that has been recently explored for…”
2. Abstract (Methods): “the contrast in the B-mode….were..”, please “was” has to be used.
3. Background:
When you say “several research groups have investigated”, “these and other studies”, etc., please, you have to add the references.
4. Methods:
When you are dealing with the low-pass filtered version of the curves, what was the characteristics of the filter? (as the cut-off frequency).
5. Results:
- “A box plot of the strain…..are shown..”, please you have to use “is shown”.
- You have used both “subgroup” and “sub-groups”, please you may use the same word in all the manuscript.
6. About figures:
Figures 1 C and D: missing labels on figures (please, indicate also the unity of measurements).

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'