Review of: "CNN-MRI Detection of Fatty Infiltration, Rotator Cuff and Infraspinatus Muscle Atrophy in Shoulder Pain Patients"

Sanggyu Lee[1]

1 Seoul National University

Potential competing interests: No potential competing interests to declare.

I had the pleasure of being recommended to review this manuscript for Qeios. As with all research endeavors, a great amount of time and effort goes into completing a manuscript, and it is appreciated. Unfortunately, the paper seems inadequate for publishing in its current form. There are three reasons for this decision.

First, the paper is missing both the Methods section and the Results section. The discussion section describes “a noticeable pattern in this research where females had a greater rate of change” (Discussion, line 1), and “have shown quantitatively that the fatty degeneration of the rotator cuff muscles advanced considerably over time in the group of patients who had CTA” (Discussion, paragraph 3, line 1), but the paper is missing any data that suggests these findings. The method for gathering data and the data itself as a table or diagram will be necessary to support the discussion.

Second, the paper does not provide enough information to reconstruct the CNN MRI code. The code provided in the “MRI Code For Shoulder Fracture” section has multiple undeclared variables, making it impossible to run. Moreover, in line 44, the code indents, suggesting a possible for loop, but the full detail of the for loop is missing. Also, the code does not provide any information regarding the model structure and only provides partial information on pre/postprocessing and training steps. The model structure is described in Figure 1, but it is incomprehensible due to low image quality. The paper is reportedly “leveraging specific tools and frameworks available in Tensorflow” (MRI Code For Shoulder Fracture, last line), but the code is heavily using PyTorch, adding to the confusion regarding the implementation details. A full code base or a detailed explanation of the CNN model is required to inform the reader.

Lastly, the paper’s objective is unclear. The abstract says that the paper “aims to create an innovative Deep Convolutional Neural Networks system for accurately predicting the diagnosis of shoulder fractures” (Abstract, line 5). However, Figure 2 focuses on the fatty degeneration of rotator cuff muscles, and the discussion compares the degeneration speed expressed as “DFfr” over sex and surgical history. This internal discrepancy perplexes the reader. The paper should target a single objective, e.g., “Comparing fatty degeneration speed between multiple patients,” and then provide “Detecting shoulder fractures using CNN” or “Quantifying fatty degeneration of rotator cuff muscles using MRI images” as subgoals, so that the paper is concise and readable.