Reviewer's report

Title: Changes in neuronal activation patterns in response to androgen deprivation therapy: A Pilot study.

Version: 1 Date: 11 August 2009

Reviewer: Shabbir MH Alibhai

Reviewer's report:

Androgen deprivation therapy (ADT) is a common treatment for men with prostate cancer. Among its various toxicities are potential impacts on cognitive function in a variety of domains. Data to date are not entirely consistent but generally suggest an impact in several domains of cognitive function with continuous ADT use, including memory, executive function, and visuo-spatial function. Important confirmatory studies and mechanistic studies need to be done.

The investigators have pushed forward the understanding in this field by looking at neuronal activation to understand whether ADT-related changes in cognitive function are real and detectable with current imaging. Using fairly standard protocols and fMRI, they demonstrated differential activation in the right parieto-occipital regions compared to controls. The paper is generally well written, although a few details are missing and would enhance the paper. Clearly it is early work, limited, as the authors acknowledge, by a small sample size. But it is the first study in this area to use functional imaging to try to delineate better what is happening in the brain in these men. This makes it an important contribution that will generate important hypotheses and require confirmatory studies.

Major Compulsory Revisions

Please specify what is the limit of detection of fMRI changes in activation based on the sample size using a yardstick that the average reader can understand (e.g. effect size, power, etc).

Minor Essential Revisions

Abstract

1. Please include number of subjects and controls.
2. Please indicate that controls were matched and on what variables.
3. In results please comment on the encoding task results as well.

Background

4. Please add a ref. for sentence 1, para. 3 on p. 3.
Methods

5. Please add a statement about sample size (likely here a convenience sample in a substudy of a larger study, so no formal calculations were done).

Results

6. No p-values are provided to allow us to contextualize fMRI changes in neuronal activation (i.e. are they significant even if observed to be different).
7. Were activation differences seen in all patients compared to controls, or only some?
8. Please add handedness of the patients. Did this affect results?

Discussion

9. The sample is highly educated. Please comment on the impact of this on findings.
10. The sex differences on mental rotation are somewhat conflicting in published studies. The authors seem to suggest prior studies have found consistent results, which is not the case.
11. Generally well written. Limitations need a bit of expansion especially with the small sample size.

Tables are fine

Figure 1 - better labelling of the illustration is necessary, in terms of anatomic description in the legend and use of arrows in the figure.

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