

## Peer Review File

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### Reviewer A

#### Comment 1:

The topic of the article is very current and interesting.

However, given the importance of the role played by chemokines and cytokines in the modulation of the immune system, I would have dealt more extensively with the immune bases of the abscopal effect, also in light of the potential synergistic effect with immunotherapy.

#### Reply 1:

Thank you for your feedback. We have elaborated on the possible immune basis to explain the abscopal effect in the revised paper.

#### Changes in the text:

We have added to our text as advised (see page 5, lines 108-110, 117-120, 122-123, 125-127; see page 6, lines 160-165).

#### Comment 2:

Did the patient have pre-existing thyroid disease? Other pathologies?

#### Reply 2:

Our patient did not have any known pre-existing thyroid pathology.

#### Changes in the text:

We have specified this as advised (see page 8, line 306).

#### Comment 3:

In consideration of the percentage of ATC, was the mutation of the tumor suppressor gene p53 sought?

#### Reply 3:

The p53 mutation was not part of our institution's mutational screen and was not sought specifically.

#### Changes in the text:

We have specified this as advised (see page 9, line 330).

#### Comment 4:

Have you performed post-operative neck ultrasounds?

#### Reply 4:

We did not perform post-operative neck ultrasound. However, in view of the metastatic disease at the outset, our team has elected to use PET CT scan as the primary modality

for cancer surveillance.

Changes in the text:

We have specified this as advised (see page 9, line 333).

Comment 5:

Was the thyroid hormone profile in good control with therapy?

Reply 5:

Our patient remained biochemically and clinically euthyroid with thyroxine replacement.

Changes in the text:

We have specified this as advised (see page 9, line 342-343).

Comment 6:

In the case of a biochemical and/or instrumental progression, do you plan to associate a tyrosine kinase inhibitor? Which one?

Reply 6:

Our patient was recently found to have a solitary lytic lesion in the right mandible during her regular PET CT scan. A MRI was performed which confirmed a 2 cm lesion within the ramus of the mandible. This lesion was biopsied under radiological guidance which confirmed follicular thyroid cancer cells without anaplastic thyroid cancer features. She is planned for SBRT and with a review for possible systemic therapy with TKIs.

Changes in the text:

We had added to the text as advised (see page 9, line 343-347).

**Reviewer B**

Comment 7:

It's an inspiring and meaningful work. I am glad that your ATC patient remains well 26-months after your treatment as the median survive of ATC is less than 6 months.

Reply 7:

Thank you for your feedback. Unfortunately, our patient was recently found to have an isolated bony metastasis (~39 months post diagnosis) and is currently planned to receive SBRT to the bony metastasis.

Changes in the text:

We have added to the text to include our patient's progress (see page 9, line 343-347).

Comment 8:

However, there are several questions need to be addressed:

Is there any other either normal or patient samples to show here in figure 1 for comparing? Hard to tell just based on one picture. A negative control is necessary. Also, please add the scale bar in figure 1 as well as the antibody information used in IHC.

Reply 8:

Thank you for your advice. We have included the necessary figures and information.

Changes in the text:

We have added to the manuscript as advised (see Figure 1; see page 8, lines 319-321).

Comment 9:

I didn't see any subtitle in part one 'introduction and mini-review'. As a mini-review of Boosted abscopal effect from radiotherapy and Pembrolizumab in ATC, I guess you want to highlight abscopal effect and the current therapy with radiation and immunomodulatory drug although you mentioned somewhere in text.

Reply 9:

Thank you for the comment. We have added subtitles in our introduction and mini-review to highlight the observed abscopal effect with current therapies.

Changes in the text:

We have added to the text as advised (see pages 4-7).

Comment 10:

There is no real evidence to support that your patient's response is because of the abscopal effect.

Reply 10:

We agree that this case report does not present sufficient evidence to support that our patient's dramatic response to therapy is due to the abscopal effect. However, this case illustrated the combinational efficacy that radiotherapy may induce systemic anti-tumour immune effects with anti-PD1 therapy. This combination therapy is worthy for future studies.

Changes in the text:

We have edited the text to highlight the limitations of our case report in drawing conclusions of the boosted abscopal effect (see page 7, lines 230-234; see page 10, lines 392-393).