

Eosinophils in kidney cancer

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Introduction

Eosinophils (EOS) are mostly known for their role in allergic and anti-parasitical responses. However, recent researches have highlighted their role in cancer. Here, we investigate, both *in vivo* and through a retrospective clinical study, the impact of EOS in clear-cell renal cell carcinoma (ccRCC).

Methods

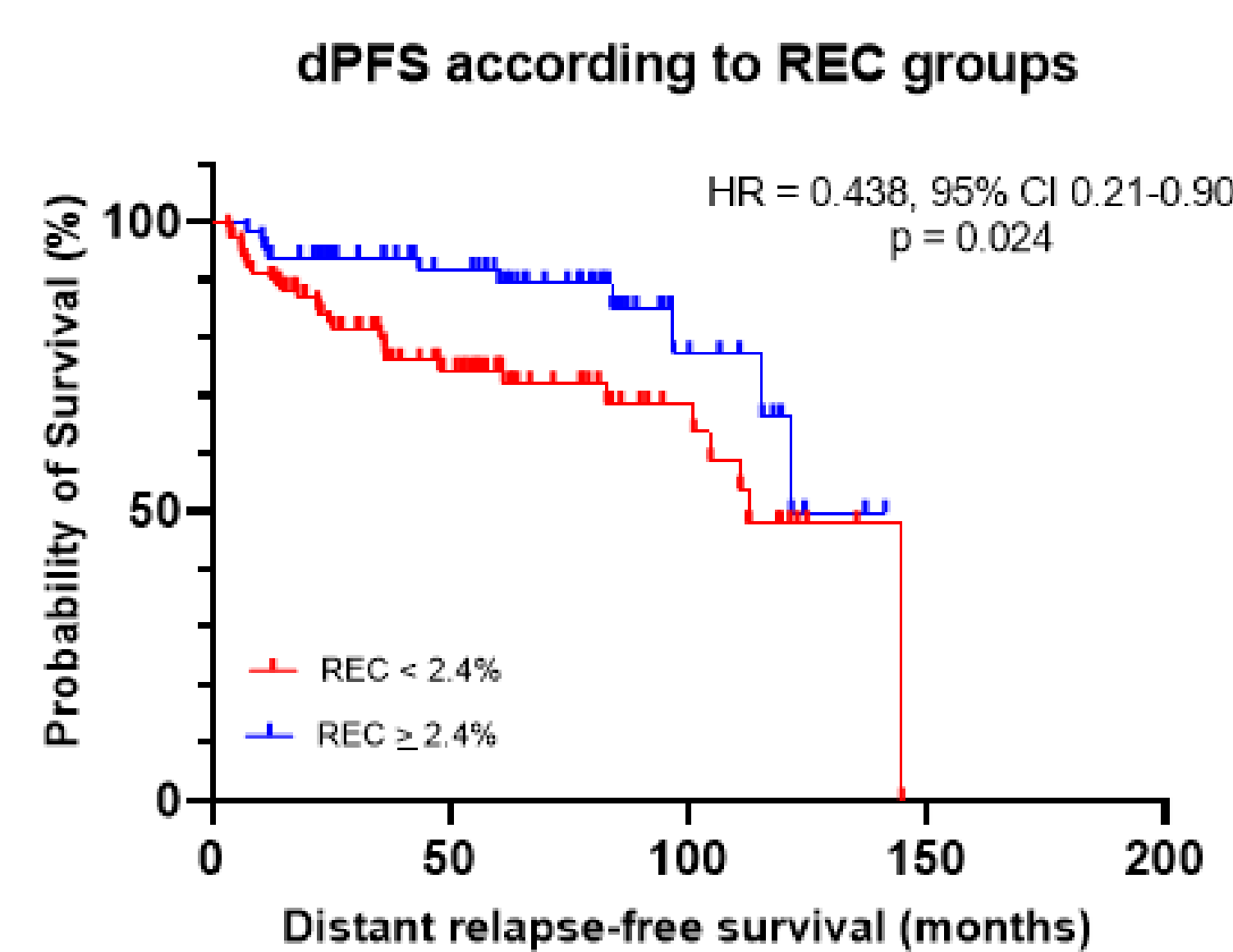
- The retrospective study included 169 ccRCC patients with clinical, pathological, survival, and hematological data collected at diagnosis, annually for 5 years, and at progression. EOS infiltration was assessed by Major Basic Protein staining in tumor samples from 92 patients, with slides segmented into tumor center, invasive margin, and peritumoral tissue. Analyses were performed in JMP Pro 17.
- To produce an *in vivo* model, RENCA cells (murine ccRCC cells) were implanted into the kidney of immunocompetent Balb/c mice. Two groups were established: one receiving injections of anti-IL-5 antibody to decrease blood EOS count, and one control group. Flow cytometry was performed on blood during experiment and at sacrifice. Tumoral kidneys were weighed and metastases were counted on lung surface and on histological slides.

Results

Retrospective study

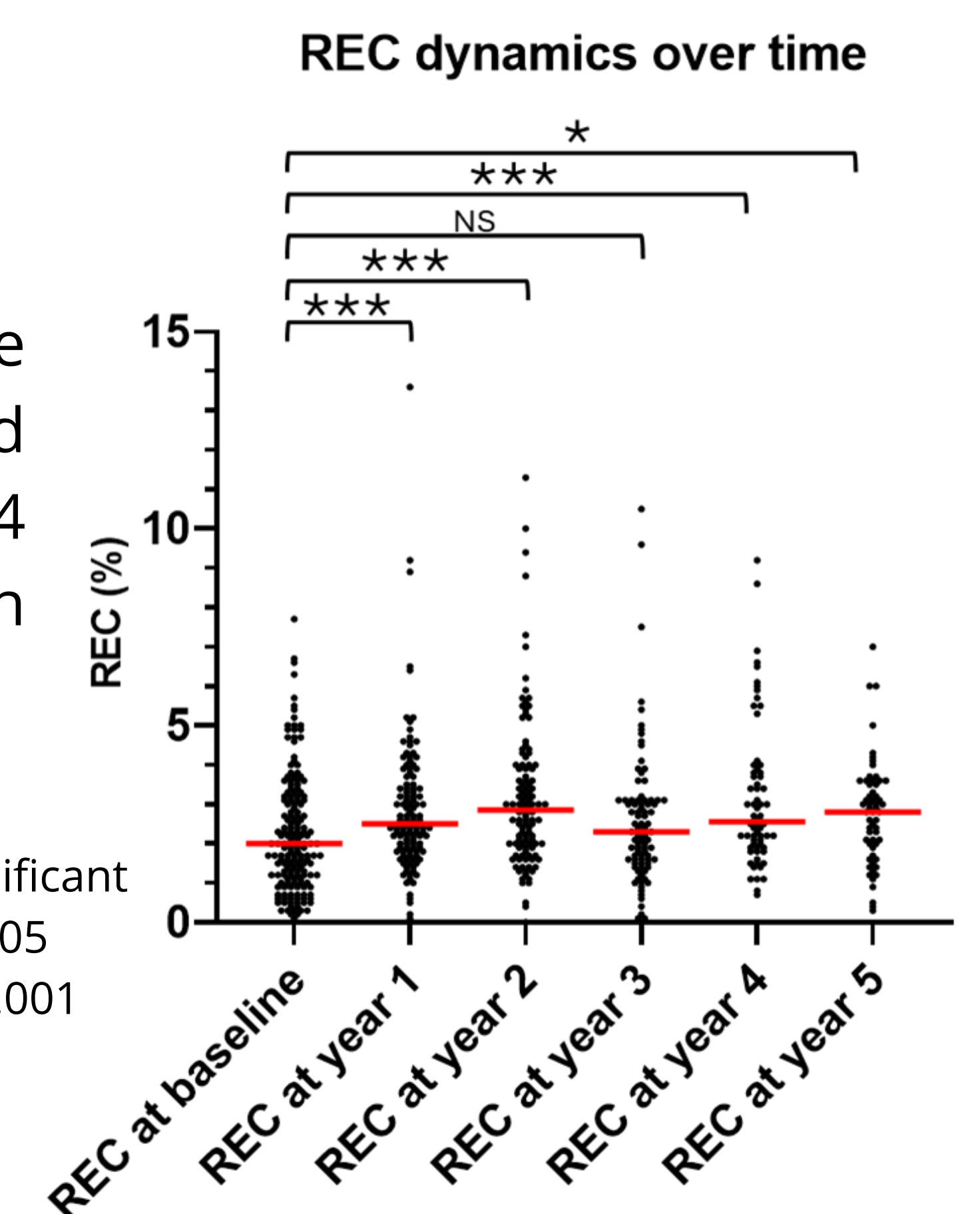
BLOOD EOS

Lower blood relative EOS count (REC) at diagnosis was correlated with a shorter distant progression-free survival (dPFS), but there was no association with cancer-specific survival.

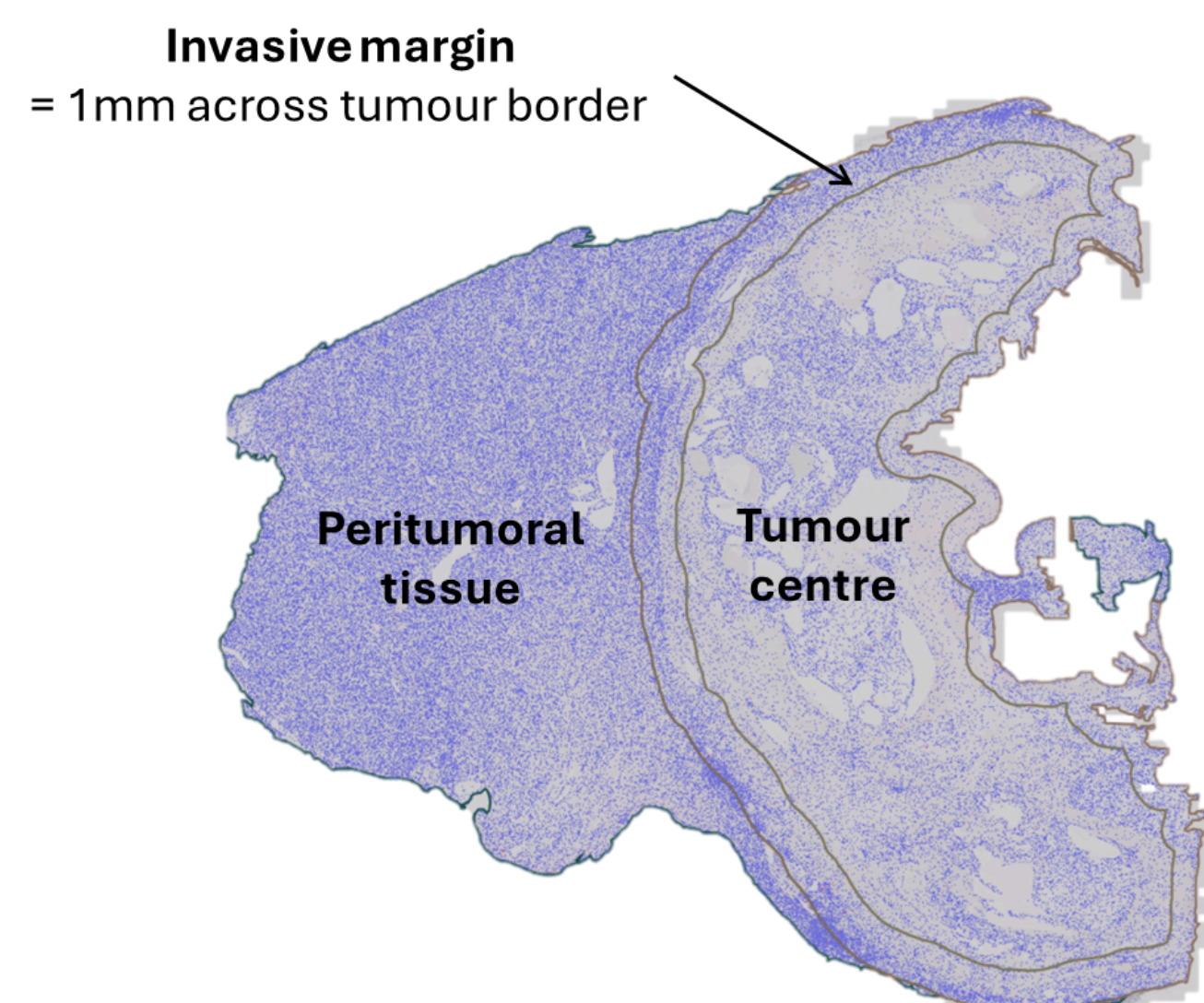


Baseline REC values were significantly lower compared with those observed at 1, 2, 4 and 5 years post-surgery in paired patient analyses.

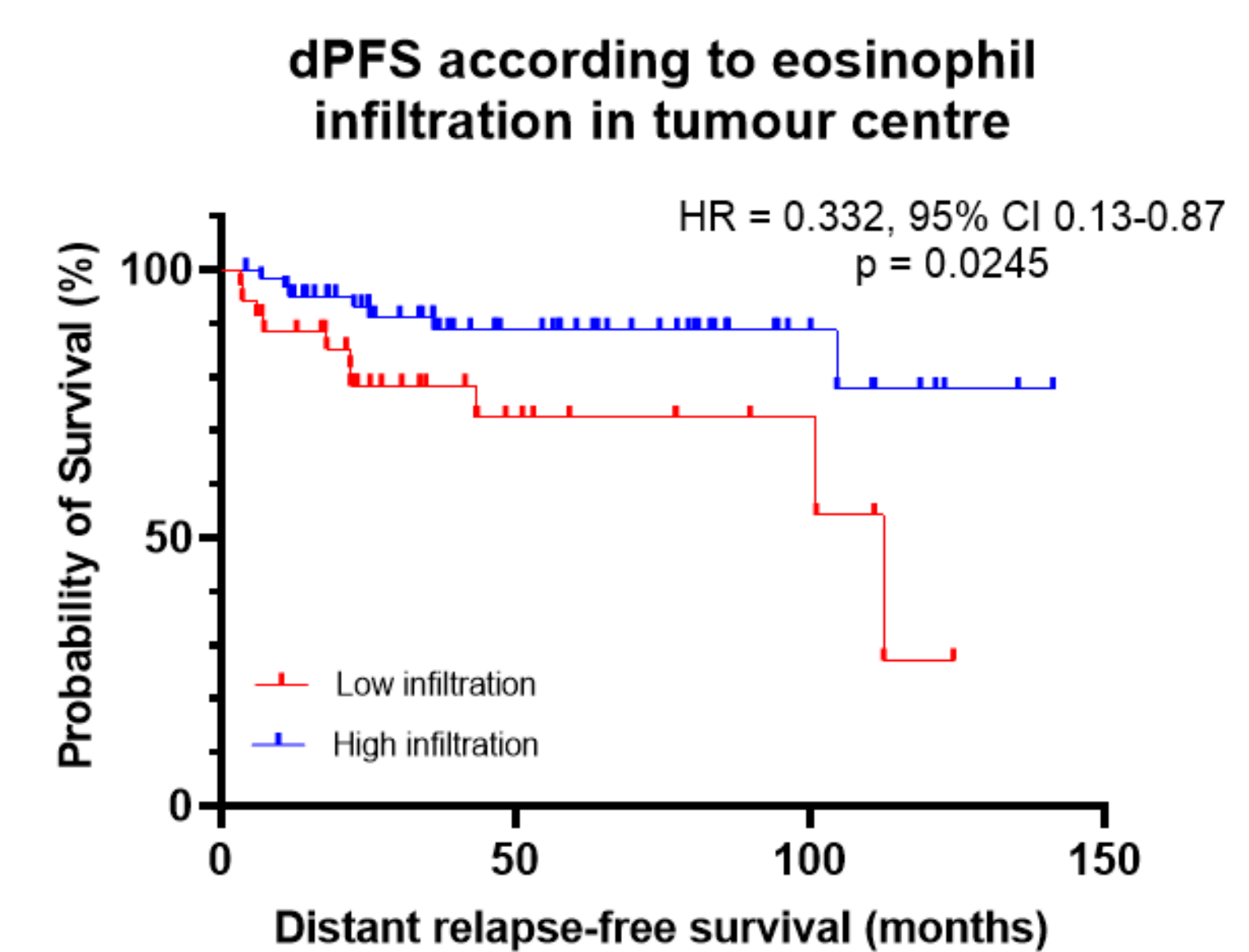
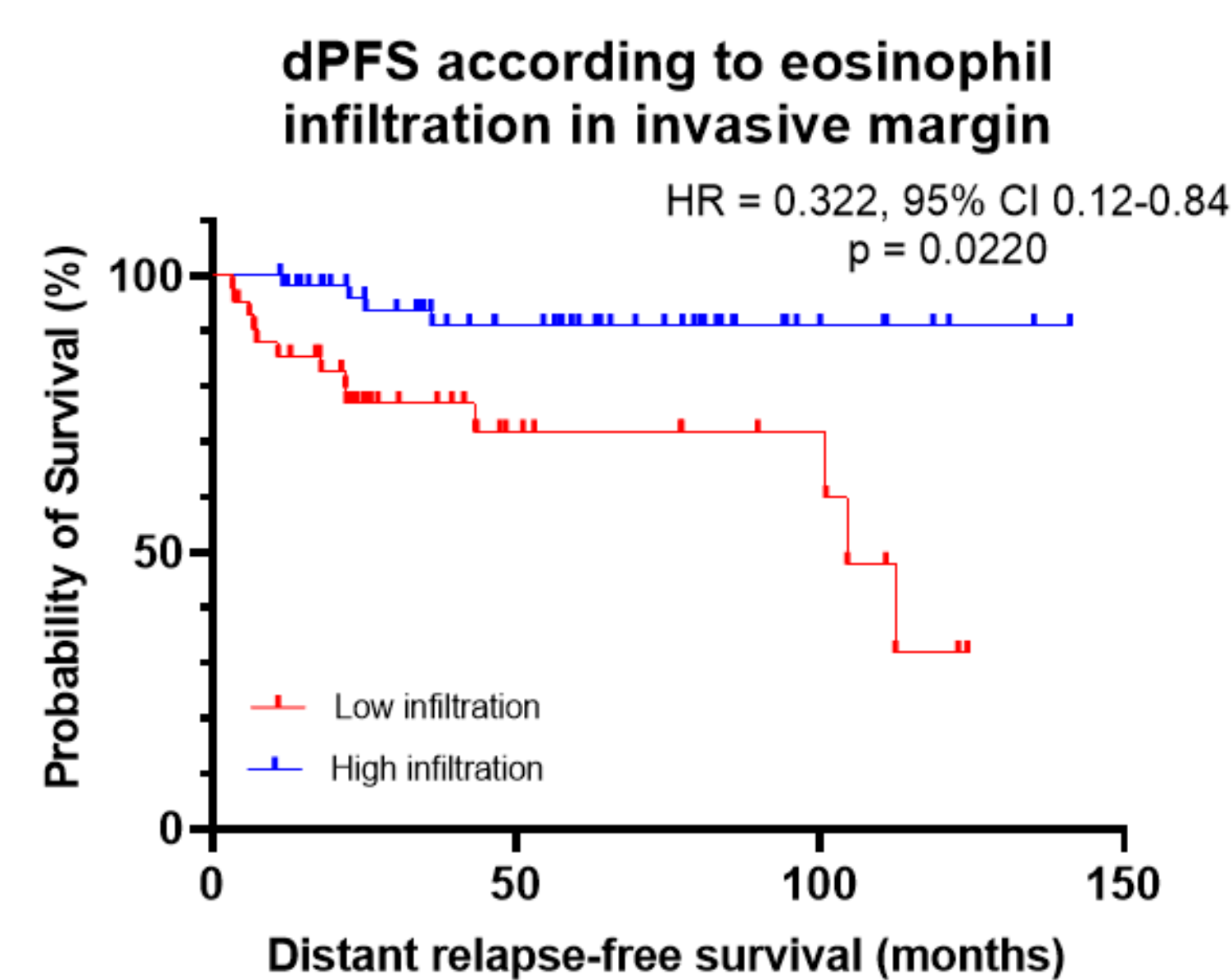
NS : non significant
* = p < 0.05
*** = p < 0.001



TISSUE EOS

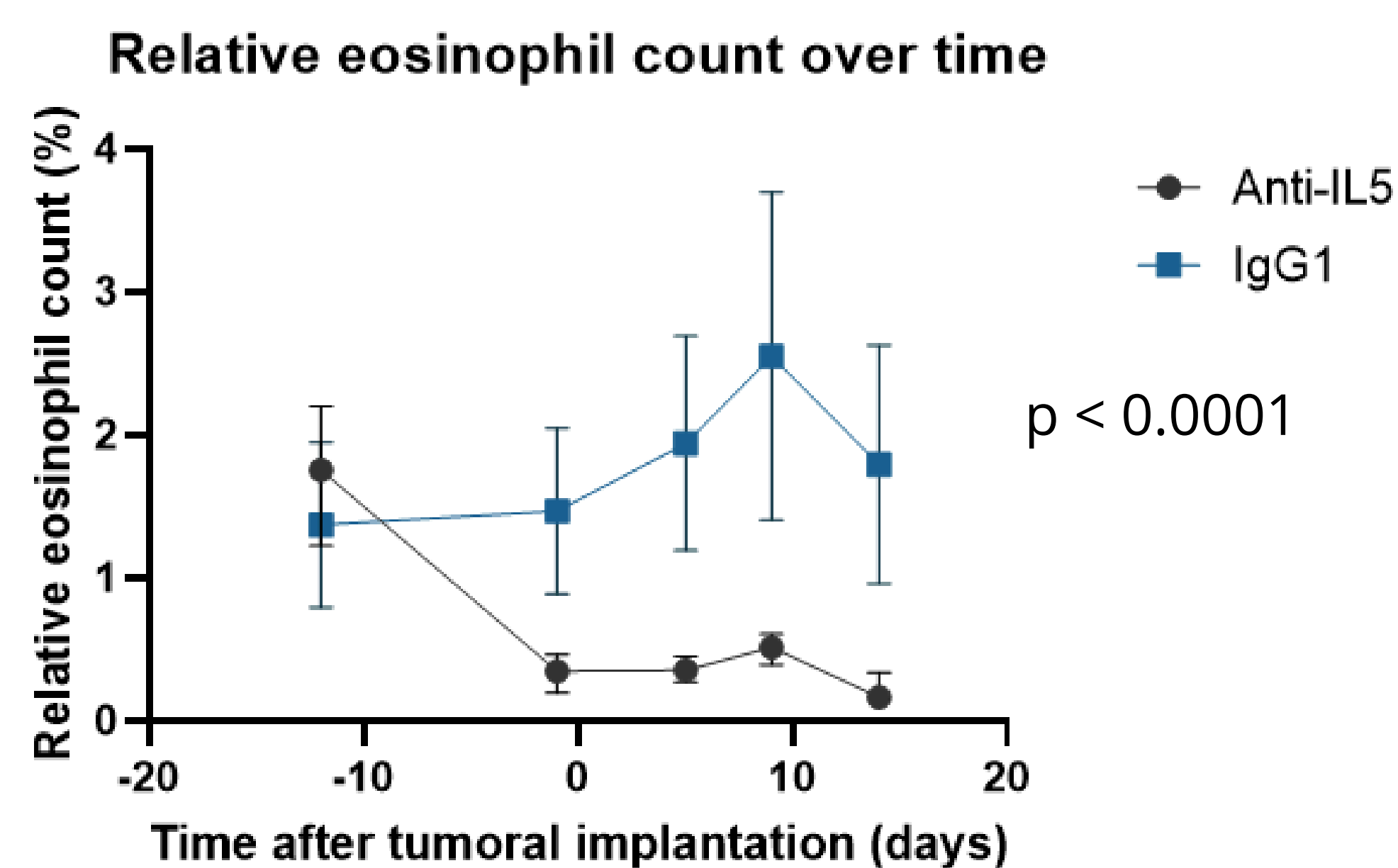


EOS infiltration in the invasive margin and tumor centre was independently associated with improved dPFS, with optimal relapse prediction cut-offs of 0.0448 ‰ (left) and 0.0306 (right), respectively.



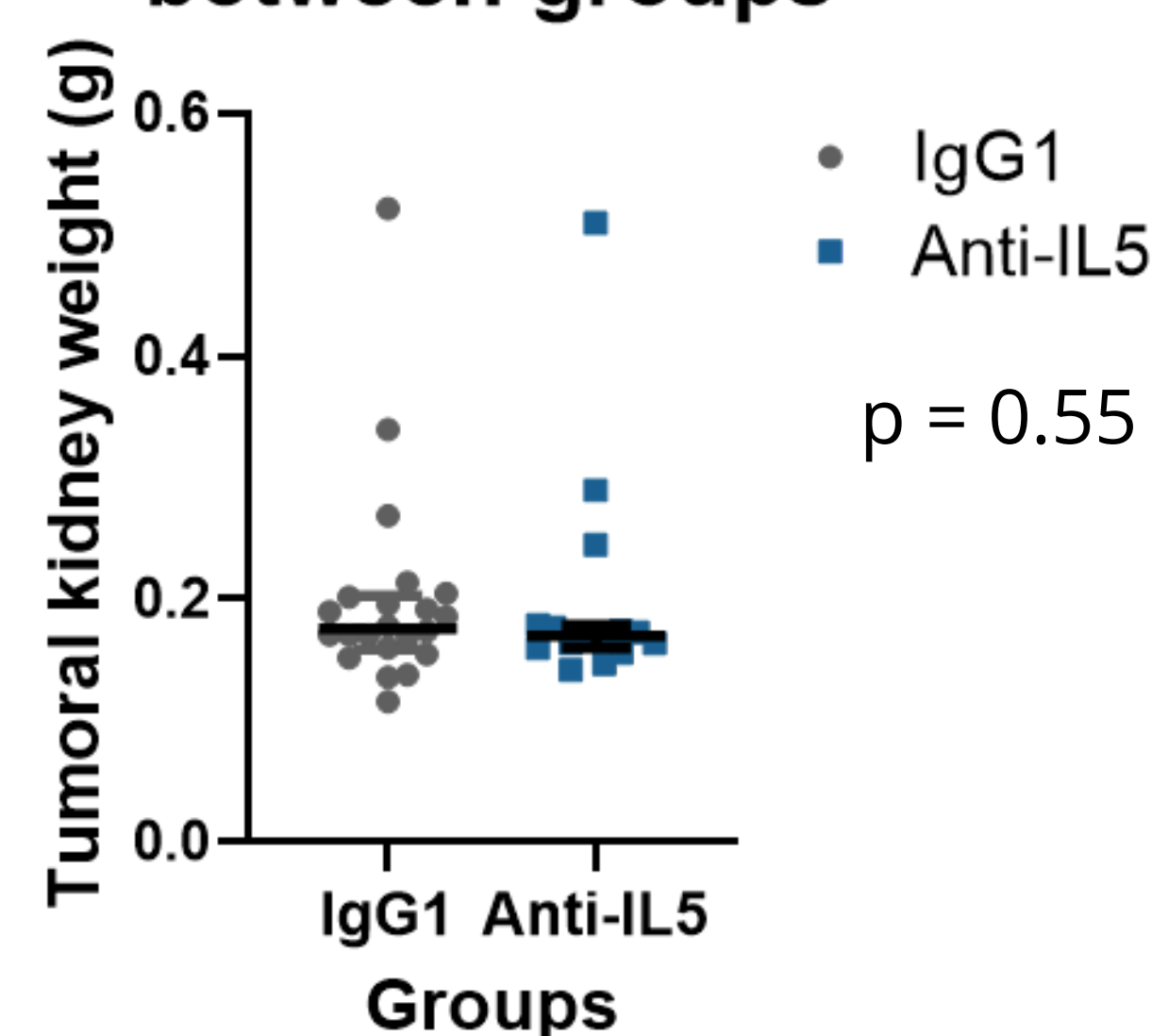
In vivo study

EOS count was decreased in the anti-IL5 group compared to the control group, while leukocytes level remained stable over time.



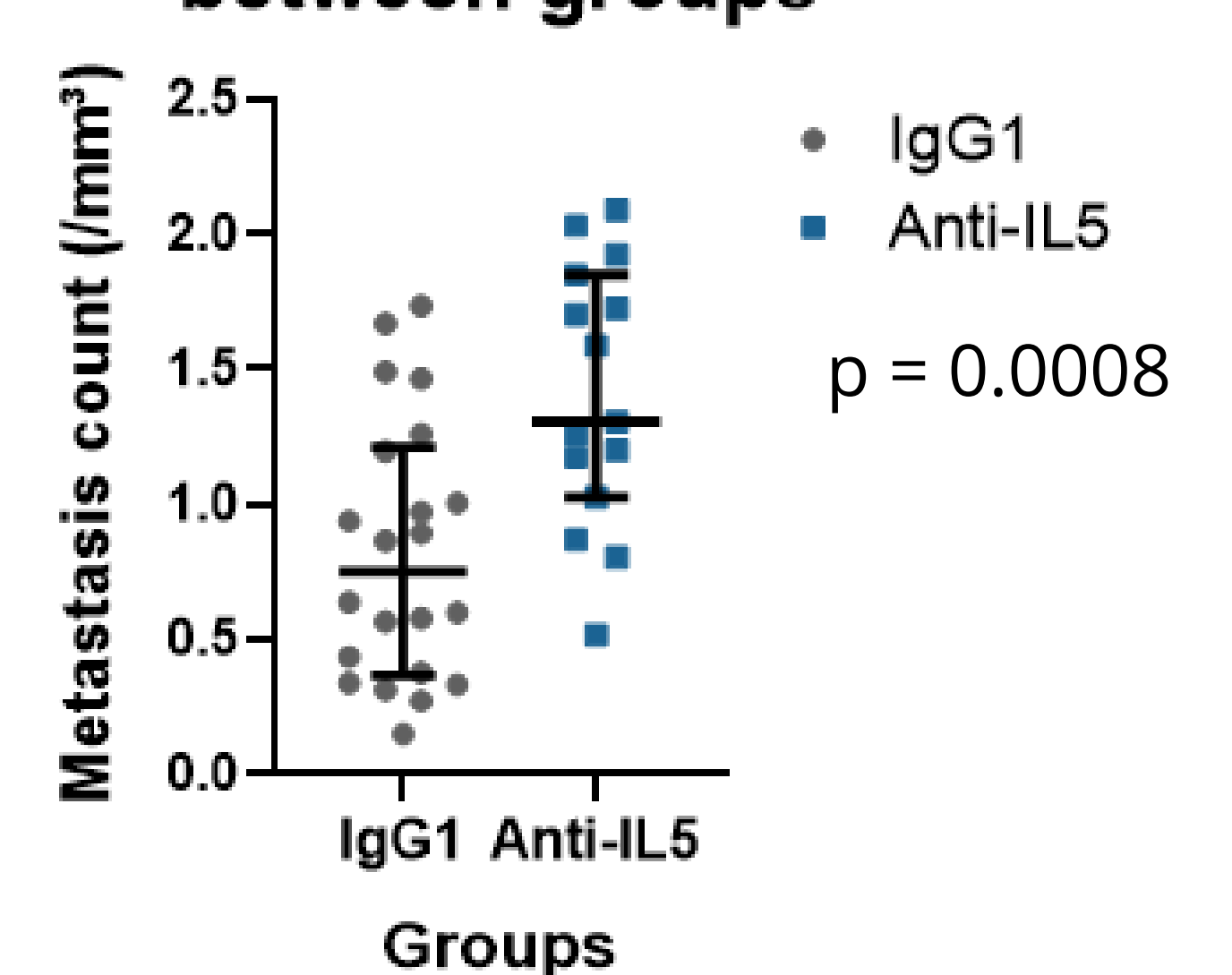
There was no difference in primary tumor growth between groups when comparing weight.

Tumoral kidney weight between groups



The number and the size of lung metastases were higher in the anti-IL5 group.

Metastasis count between groups



Conclusion

In conclusion, EOS seem to play a protective role in metastatic dissemination in our *in vivo* model, as confirmed by the association between EOS count at diagnosis, EOS infiltration in tumor and a better prognosis for patients diagnosed with localized ccRCC. Experiments must be repeated to confirm these results and investigate further the mechanism by which EOS influence metastatic dissemination.

Thanks to...

