

# The influence of anaesthesia on cancer growth

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## To the editor

I read with a great interest the review recently published in Radiology and Oncology by Potocnik et al.<sup>1</sup> Upon examination, I have identified a critical discrepancy between the review's main text and the cited meta-analysis<sup>2</sup> results, which seems to have led to a significant misunderstanding in the presentation of the findings.

The review states that in a recent meta-analysis<sup>2</sup>, patients with breast, esophageal, or non-small cell lung cancer had improved recurrence-free survival after receiving volatile anesthesia (VA) and that overall survival was longer after VA than after total intravenous anesthesia (TIVA). This statement contradicts the findings of the cited meta-analysis, which actually shows that TIVA is associated with improved outcomes both in terms of recurrence-free survival (pooled Hazard Ratio [HR], 0.78; 95% Confidence Interval [CI], 0.65 to 0.94;  $P < 0.01$ ) and overall survival (pooled HR, 0.76; 95% CI, 0.63 to 0.92;  $P < 0.01$ ) across several cancer types, including breast, esophageal, colorectal, gastric, and non-small cell lung cancer.

Interestingly, the conclusion section of the review correctly highlights the potential anti-inflammatory, antioxidant, and possibly antitumor effects of propofol (a common TIVA agent) compared to the proinflammatory effects of volatile anesthetics, which could accelerate metastasis. This conclusion aligns with the meta-analysis findings that favor TIVA over VA, suggesting a potential oversight or error in the review's main text.

Given the significance of these findings for clinical practice and the potential impact on patient care, I believe a clarification and correction of the discrepancy in the review's main text is crucial. Accurate representation of the meta-analysis results is essential for guiding future research and clinical decisions regarding anesthesia choice in cancer surgery.

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## Notes

No potential conflict of interest relevant to this letter was report.

## References

1. Potocnik I; Kerin-Povsic M, Markovic-Bozic J. The influence of anaesthetic technique on cancer growth. *Radiol Oncol* 2024; **58(1)**: 9–14. Available at: <https://www.radioloncol.com/index.php/ro/article/view/4210>
2. Yap A, Lopez-Olivo MA, Dubowitz J, Hiller J, Riedel B; Global OncoAnesthesia Research Collaboration Group. Anesthetic technique and cancer outcomes: a meta-analysis of total intravenous versus volatile anesthesia. *Can J Anaesth* 2019; 66: 546-61. doi: 10.1007/s12630-019-01330-x

## Responses

### The authors reply

While reviewing the article<sup>1</sup>, we realised that we had made a mistake. Instead of VIMA, we should have written TIVA. Please, accept our apology. In the article, we also cited studies that concluded that volatile anaesthetics have anti-inflammatory action and so might act anti carcinogenic.<sup>2-6</sup> In the conclusion we also wrote that this area is still quite unexplored and that studies have led to very controversial results. Regarding that please, find enclosed an additional reference of Wang J *et al.*<sup>7</sup>, who proved that volatile anaesthetics have a role in the anti-cancer relevant signalling. Therefore, above mentioned mistake luckily did not have an effect on the message of the article.

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