

Review of: "The Efficacy of Desmopressin and Imipramine in Retaining the Instilled Suspension in the Bladder"

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Potential competing interests: No potential competing interests to declare.

Here are some weak points of the paper based on its methodology, results, and overall design:

1. Inability to Extend Dwelling Time Without Anesthesia

- The central hypothesis of the study was that desmopressin and imipramine could reduce urination frequency and extend dwelling time without anesthesia. However, the results showed that neither drug could successfully achieve this. All animals urinated as soon as the anesthesia wore off, making the approach ineffective for the intended purpose.

2. Inconsistent Results with Imipramine

- The combination of desmopressin and imipramine did not significantly improve results compared to desmopressin alone. Imipramine, which was meant to block bladder outflow and prevent urination, did not deliver the expected results. The potential confounding factor of additional water introduced during gavage administration further complicates the interpretation of its effects.

3. Lack of Quantification for Urine Volume

- A key limitation is the lack of measurement for urine volume and the amount of voided methylene blue. While the frequency of urination was recorded, knowing the volume of urine could have provided more insight into whether small amounts of the instilled solution remained in the bladder, which could still potentially lead to tumor formation.

4. Small Sample Size

- The use of only 24 mice, divided into four groups, limits the statistical power of the study. A larger sample size could have provided more robust results and helped mitigate individual variability between animals.

5. Limited Focus on Alternatives

- The study only tested desmopressin and imipramine as potential agents to increase dwelling time. There is limited exploration of other possible agents or methods that could have been more effective. For example, more potent anti-diuretics or different bladder outflow blockers could have been considered.

6. Inconsistent Administration of Imipramine

- Imipramine was administered orally via gavage, introducing water into the system, which may have increased urination frequency. Injectable forms of anticholinergic drugs were not used, which could have provided better control over the bladder's response without introducing extra fluids.

7. No Measurement of Tumor Formation

- The study does not extend to measure the actual formation of tumors after instillation. While the primary goal was to assess retention time, not measuring tumor formation leaves the study incomplete in terms of assessing the biological relevance of their findings.

8. Lack of Long-Term Study

- The study was conducted over a very short period, focusing only on the immediate effects of desmopressin and imipramine on urination frequency. A longer-term study might have explored whether repeated dosing or different dosages could have improved results.

9. Limited Relevance to Human Models

- While the study uses an orthotopic model to mimic human bladder cancer, the effectiveness and direct applicability of the findings to human cancer research remain unclear, especially since the proposed methods were not successful in this animal model.

Addressing these weaknesses in future studies could improve the reliability and applicability of the results, particularly in modeling bladder cancer and improving tumor cell retention without prolonged anesthesia.