

Does Early Whole Blood Cause Hypocalcemia?

Evidence from Military Prehospital Transfusion Practice

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Introduction

Hypocalcemia is common after major trauma and is associated with worse outcomes. While post-injury hypocalcemia is multifactorial, citrate in transfused blood products may contribute to hypocalcemia. The relationship between prehospital blood product administration and hypocalcemia in military trauma remains unclear. We evaluated the association between prehospital transfusion dose and ED ionized calcium levels.

Methods

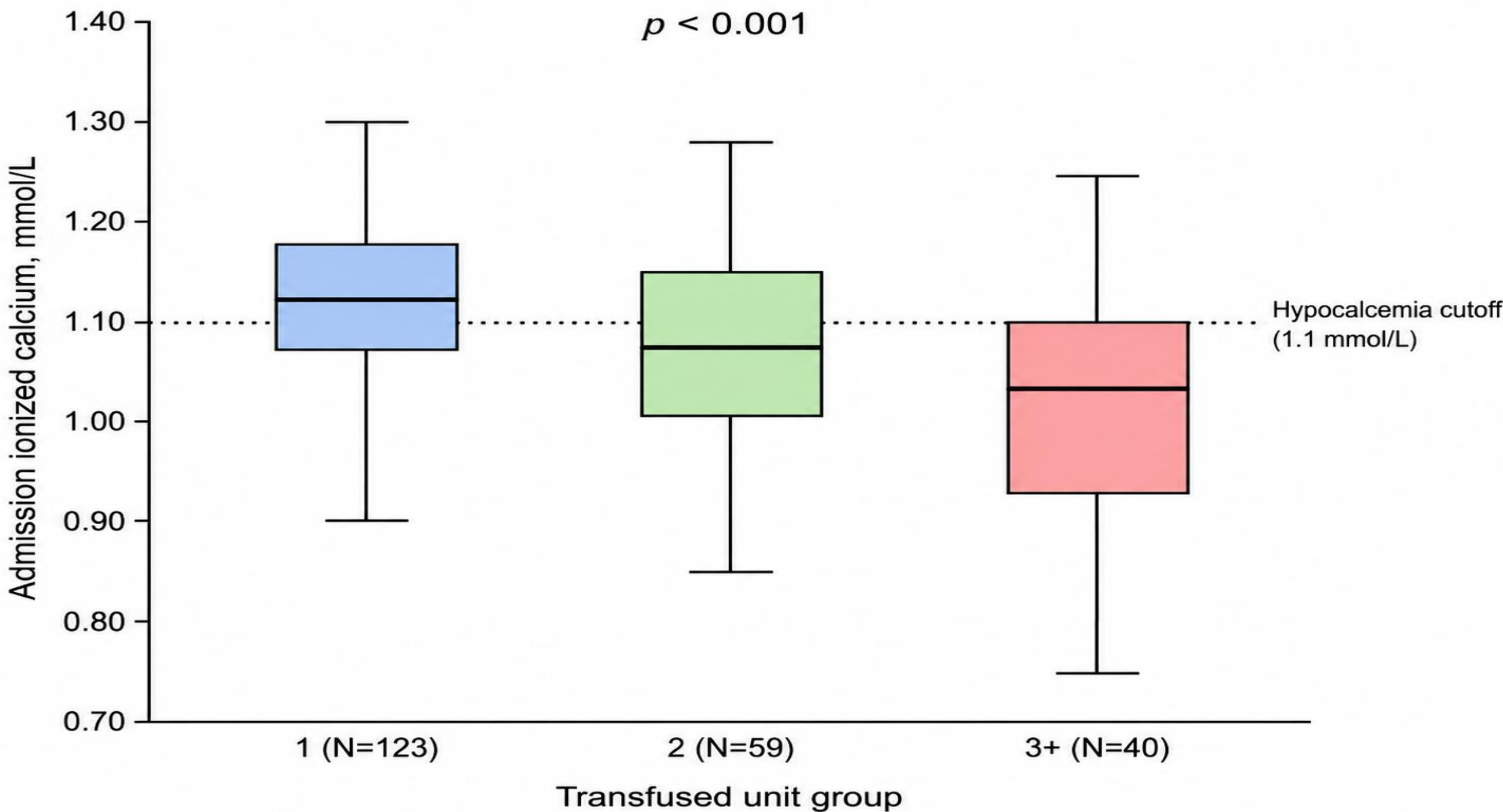
A retrospective analysis of combat casualties (Oct 2023–Jan 2025) who received prehospital blood products. Data were extracted from the IDF Trauma Registry (prehospital) and the Israeli National Trauma Registry (in-hospital). Casualties were grouped by units received (1-3+) either freeze dried plasma or low titer o- whole blood. Calcium levels were compared across dose groups using the Kruskal–Wallis test.

Results

Overall, 333 casualties were treated with blood products (Oct 27, 2023–Jan 19, 2025). 222 had ionized calcium levels, while hypocalcemia rates were 54%.

Conclusions

Current calcium supplementation practice is largely extrapolated from massive transfusion protocols, leaving a gap for prehospital whole blood. Our findings show significant change ionized calcium on ED arrival. The observed differences suggest clinical impact at typical field doses. These results support selective calcium administration rather than routine empiric dosing. Further research is needed.



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