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REVIEWER'S REPORT

Manuscript No.: **IJAR-53401** Date: 19-08-2025

Title: Evaluation of the Interrelationship between Serum Osteocalcin Vitamin D and Parathyroid Hormone Levels and Glycemic Control in Type 2 Diabetes Mellitus in a Cross-Sectional Study

Recommendation:
Accept as it is .....YES.....
Accept after minor revision.....
Accept after major revision .....
Do not accept (*Reasons below*) .....

Rating	Excel.	Good	Fair	Poor
Originality			✓	
Techn. Quality			✓	
Clarity			✓	
Significance			✓	

Reviewer Name: Dr Aamina

Reviewer's Comment for Publication.

General Assessment:

The manuscript presents a cross-sectional observational study that explores the associations between bone metabolism biomarkers—osteocalcin, vitamin D, and parathyroid hormone (PTH)—and glycemic indices in individuals with Type 2 Diabetes Mellitus (T2DM). The study is timely, relevant, and grounded in the growing recognition of the interplay between bone metabolism and glucose regulation. By incorporating both biochemical markers and standard glycemic parameters, the research offers a comprehensive perspective on the metabolic interconnections in T2DM.

Originality and Relevance:

The integration of osteocalcin, vitamin D, and PTH in relation to glycemic control contributes novel insights to the literature. While osteocalcin and vitamin D have been studied individually in diabetes, this study's inclusion of PTH provides a broader biochemical framework for understanding bone-pancreas interactions. The subject matter is highly relevant, considering the global and national (India-specific) burden of T2DM and the potential for bone-derived markers to serve as adjuncts in clinical risk assessment.

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Clarity and Structure:

The abstract clearly summarizes the background, methodology, results, and conclusions in a structured manner. The introduction effectively situates the study in the wider epidemiological and clinical context, emphasizing the global prevalence of T2DM and its specific impact in India. The flow of information is logical, moving from global statistics to the rationale for investigating bone biomarkers in diabetic pathophysiology.

Methodology:

The cross-sectional design involving 200 participants (100 T2DM patients and 100 matched healthy controls) provides a balanced comparison. The choice of fasting blood sugar (FBS), random blood sugar (RBS), and HbA1c as glycemic parameters ensures clinically meaningful assessment. Serum osteocalcin, vitamin D, and PTH were appropriately measured using standard assays, and statistical analysis focused on identifying correlations between markers and glycemic indices.

Findings:

The results demonstrate distinct biochemical differences between T2DM patients and controls:

- Significantly lower levels of osteocalcin and vitamin D in diabetic individuals.
- Higher levels of PTH among T2DM patients.
- Inverse correlations between osteocalcin/vitamin D and glycemic indices (FBS, RBS, HbA1c).
- Positive correlation between PTH levels and poor glycemic control.

These findings underscore the altered bone marker profile in T2DM and suggest potential contributions to metabolic dysregulation.

Contribution to Knowledge:

The study enriches understanding of the complex interrelationships between glycemic control and bone metabolism. It highlights the potential clinical significance of monitoring bone-related biomarkers in addition to conventional glycemic measures. By demonstrating consistent associations in a sizeable sample, the research strengthens the evidence base for considering osteocalcin, vitamin D, and PTH in diabetes care and management.

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Language and Presentation:

The manuscript is written in a clear, professional, and academic tone. Terminology is accurate, and key concepts are articulated with clarity. The structured presentation of abstract, introduction, and results facilitates readability and comprehension.

Conclusion:

This study establishes significant associations between serum osteocalcin, vitamin D, PTH, and glycemic control in T2DM patients. It emphasizes the broader metabolic interplay between bone and glucose regulation, with implications for clinical assessment and potential therapeutic strategies. The research contributes valuable data to the evolving field of bone-diabetes interrelationships and warrants attention in both academic and clinical contexts.