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(CASE REPORT)

A Case of Late-Onset Hypocalcemic Tetany Precipitated by Sequential Viral Infections in a Post-Thyroidectomy Patient

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Abstract

Background: Hypocalcaemia is an ordinary issue that may present after a thyroidectomy; nevertheless, it's not as widely known that it may flare up later because of an underlying illness. Specifically, this report addresses how multiple viral infections might contribute to catastrophically low calcium levels in a vulnerable patient.

Case Presentation: In November 2024, a 62-year-old woman with a past of a total thyroidectomy three years preceding that was complicated by an unintentional parathyroidectomy and protracted hypoparathyroidism proceeded to the emergency room with acute hypocalcemic tetany. Before she turned hospitalised, she had two infections in a sequence: a severe respiratory virus and an entirely new confirmed SARS-CoV-2 (COVID-19) infection. She had been consistent on a set regimen of calcium and calcitriol previously.

Intervention: The patient received medical treatment shortly thereafter with calcium gluconate infused through an IV, which interrupted the tetany. subsequent to that, her long-term therapy schedule was amended to include a higher dose of calcitriol and calcium.

Outcomes: The patient's serum calcium levels reverted approximately normal, and she was transported residence with a new, stabilised medication approach.

Conclusion: This case demonstrates how individuals who have had a thyroidectomy who currently have chronic hypoparathyroidism do not possess an abundance of metabolic balance. Hypocalcaemia can be life-threatening when it develops by systemic stressors, especially multiple viral infections. It highlights how important it is to instruct patients how to manage their days off and to implement temporary dose adjustments when they have more than one infection intercurrent illnesses.

Keywords: Hypocalcemic Tetany; Thyroidectomy; Hypoparathyroidism; COVID-19; Viral Infection; Case Report

1. Introduction

Hypocalcaemia in hypoparathyroidism is one of the primary adverse reactions of a total thyroidectomy. About 1% to 4% of patients will have chronic hypoparathyroidism (Edafe et al., 2014). Long-term care usually calls for taking extra calcium and active vitamin D (calcitriol) to preserve serum calcium levels at what is considered normal (Bollerslev et al., 2015). Even though majority of patients reach biochemical normality, this is a hazardous condition because it is

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contingent upon fixed-dose supplementation and doesn't have the dynamic, equilibrium-preserving control that parathyroid hormone (PTH) normally offers.

A growing number of researchers become engaged in the ways their equilibrium can be interrupted by physiological pressures. In particular, systemic infections can render calcium homeostasis less predictable. This became very apparent during the SARS-CoV-2 (COVID-19) worldwide outbreak, as many studies revealed that a lot of infected people experienced low calcium levels. For example, Cappellani et al. (2020) discovered that 66.7% of their COVID-19 patients had low levels of calcium and that chronic deficiencies in calcium were a strong indicator of negative results. The existing medical literature, on the other hand, typically focusses on hypocalcaemia shortly after surgery or in people who were asymptomatic before suffering acute COVID-19. Plenty of additional studies require to be accomplished to fully comprehend how both distinct viruses might collaborate together and render chronic hypoparathyroidism vulnerable long after the first surgery.

This report steps in that gap through demonstrating a case of hypocalcemic tetany that was potentially life-threatening and originated by multiple viral infections lengthy upon a thyroidectomy. That demonstrates an essential weakness that calls for urgent medical management.

2. Case presentation

2.1. Demographic and Historical Information

This is a 62-year-old woman having undergone a total thyroidectomy three years ago for a massive and painful multinodular goitre. An accidental parathyroidectomy rendered the surgery more complicated, and a histopathological report affirmed this. This culminated in permanent hypoparathyroidism. Calcium carbonate (1,000 mg TID) and calcitriol (0.5 mcg BID) were prescribed to her by mouth upon surgery in order to preserve her stable. For more than two years, this regimen of medication kept her condition under surveillance, and every three months, her serum calcium levels had been determined to be satisfactory.

2.2. Presenting Complaint and History of Present Illness

A woman called 911 in November 2024 for the reason she was having intensely painful muscle spasms in both of her legs and hands. She eventually went to the emergency room. When she arrived there, she claimed that she felt numbing around her mouth and had generalised anxiety. In the past 24 hours, her symptoms had become worse. The clinical timeline showed that her decompensation arose after two illnesses which occurred one shortly after the other. First, in October 2024, she had a severe respiratory virus infection that wasn't COVID. It prompted a high fever, a productive cough, and a lot of exhaustion. Not long after she acquired better from her first illness, she got SARS-CoV-2, which had been verified by a lab. About a week after her acute COVID-19 symptoms disappeared subsided, she started having acute tetany.

2.3. Assessment Findings

The patient was in moderate concern when they underwent examination. It was observed that both Chvostek's and Trousseau's signs were positive. Biochemical tests confirmed that the person had severe hypocalcaemia, with a serum calcium level of 6.2 mg/dL (the normal range is 8.5 to 10.5 mg/dL). You were unable to discern how low her PTH level had been. The level of magnesium in the blood was underneath the normal range (1.8 mg/dL). The patient acknowledged that she emphasised her medications as prescribed.

2.4. Intervention and Outcomes

An intravenous injection of 1 gramme of 10% calcium gluconate was infused to treat her acute tetany. This swiftly ended her muscle spasms. After this, an ongoing intravenous infusion began. After 24 hours, she switched to a higher oral regimen of calcium carbonate 1,500 mg TID and calcitriol 0.75 mcg BID. Over the next 48 hours, her serum calcium levels rebounded to normal, and she was sent back home with a new, stable medication protocol.

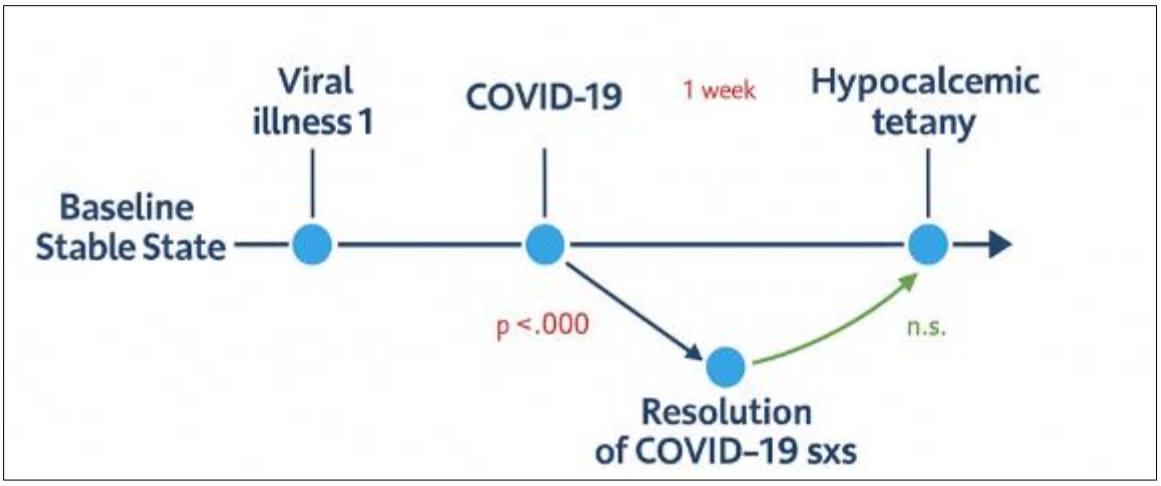

Figure 1 Timeline of Illnesses Preceding Acute Tetany

This figure illustrates the sequence of events, from the patient's baseline stable state, through the two sequential viral infections, to the eventual presentation with hypocalcemic tetany one week after COVID-19 symptom resolution

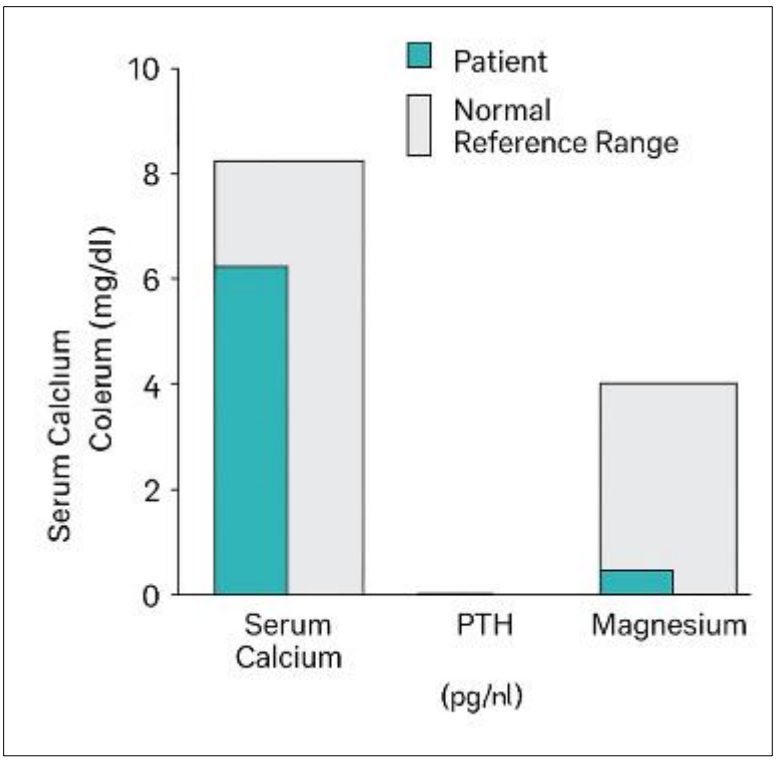

Figure 2 Biochemical Profile at Presentation

A bar chart comparing the patient's serum calcium, PTH, and magnesium levels at presentation against the standard normal reference ranges, highlighting the profound hypocalcemia and absent.

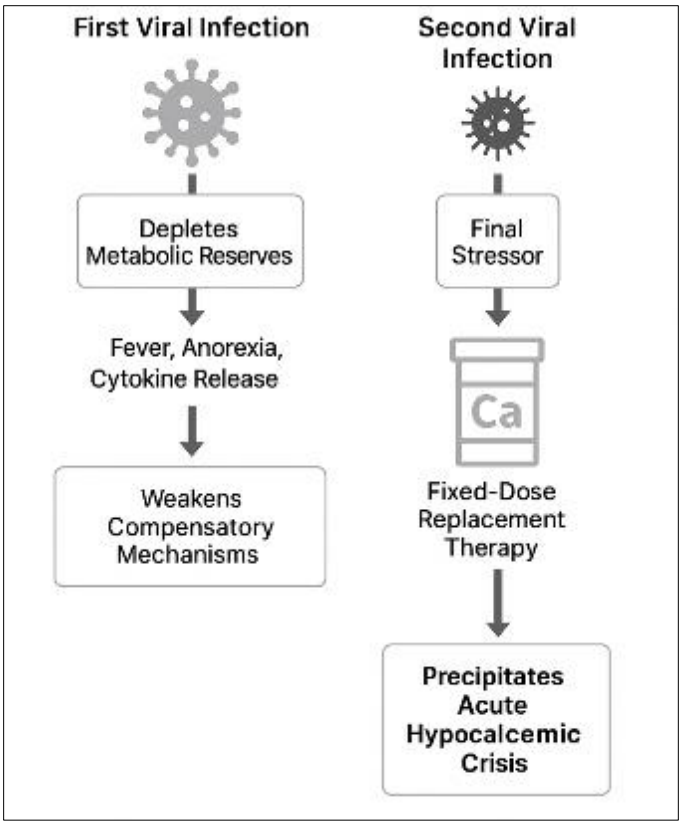

Figure 3 Proposed "Two-Hit" Pathophysiological Model

A conceptual diagram illustrating how the first viral infection (Hit 1) depletes metabolic reserves (e.g., via fever, anorexia, cytokine release), weakening the patient's compensatory mechanisms. The second infection (Hit 2) then acts as a final stressor, overwhelming the fixed-dose replacement therapy and precipitating the acute hypocalcemic crisis.

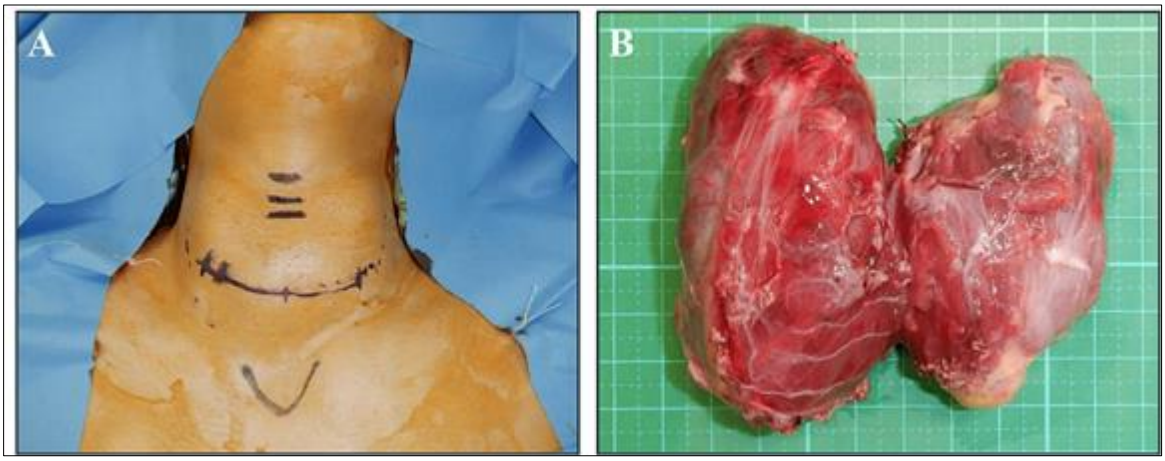

Figure 4 Surgical field and resected thyroid specimen

- Intraoperative view of the anterior neck showing skin preparation, planned transverse cervical incision line, and surface markings of the tracheal rings prior to thyroidectomy.
- Gross photograph of the excised, markedly enlarged thyroid gland demonstrating bilobar architecture on a measuring grid background.

Abbreviations

- HD: Hemithyroidectomy;

- TT: Total thyroidectomy;

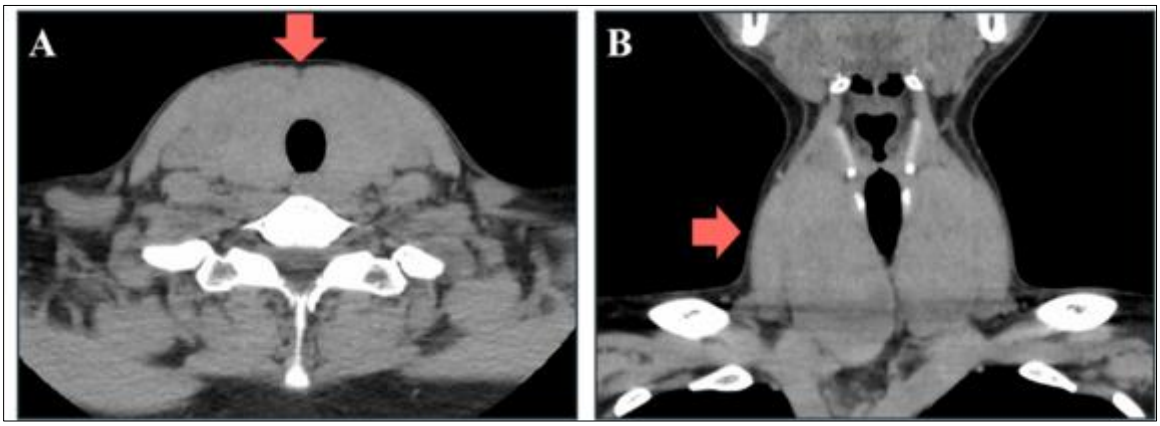

Figure 5 Preoperative contrast-enhanced CT of the neck showing anterior cervical subcutaneous mass

- Axial CT image demonstrating a well-defined, homogeneous soft-tissue density lesion in the midline anterior neck subcutaneous plane (red arrow).
- Coronal CT image confirming the elongated anterior cervical subcutaneous lesion without deep extension or airway compromise (red arrow).

Abbreviation

CT: computed tomography;

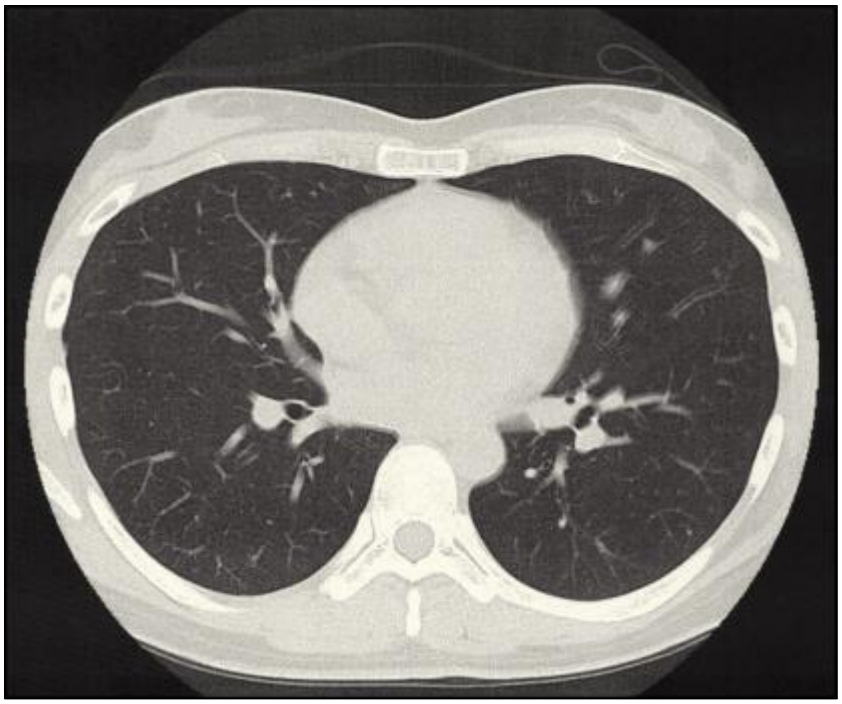

Figure 6 Axial chest CT demonstrating normal lung parenchyma

Axial contrast-enhanced CT image at the mid-thoracic level showing clear bilateral lung fields without focal consolidation, mass, effusion, or pneumothorax, and a normal-appearing heart and mediastinum.

Abbreviation

CT: computed tomography;

3. Discussion

This case demonstrates an exceptionally significant clinical scenario in which a patient with stable chronic hypoparathyroidism unexpectedly developed considerably worse in response to several viral infections. The sequential nature of occurrences strongly supports a dual-hit model of illness and wellness. The initially diagnosed respiratory virus probably did the most damage, emptying her metabolic stores through processes like decreased dietary intake, digestive expenditures, and inflammation prompted by cytokines. Her following infection with SARS-CoV-2 was the ultimate thing that contributed to her feel stressed. It rendered her fixed-dose replacement medications inadequate and led to overt tetany.

The findings we reported are in alignment with and add to the knowledge that has been previously established about infection-induced hypocalcaemia. It is widely acknowledged that COVID-19 has a high rate of hypocalcaemia. A substantial study by Sun et al. (2021) concluded that hypocalcaemia had been identified in more than 70% of COVID-19 patients who were hospitalised and had been associated to a 3.5-fold elevated likelihood of serious disease. The suggested approaches comprise more than a single component. COVID-19 is known to cause an intense cytokine release syndrome. High levels of interleukin-6 (IL-6) can stop PTH compared to circulating and stop PTH receptors from responding properly (Zhou et al., 2020). Also, vitamin D deficiency is particularly ubiquitous and has been contributed to worse outcomes in COVID-19. This may become worse during the acute phase (Merzon et al., 2020). Our patient's low magnesium level is also clinically relevant because hypomagnesaemia may contribute to functional hypoparathyroidism by preventing PTH secretion and end-organ resistance. This is a well-known influence in critically ill individuals (Agus, 1999).

This case expands beyond the acknowledged relationship between acute COVID-19 and low calcium levels through demonstrating how it may worsen circumstances worse in an assortment that includes individuals who already possess very vulnerable. People diagnosed with chronic hypoparathyroidism are not competent to boost their PTH levels in reaction to a low calcium challenge. A study by Underbjerg et al. (2014) demonstrated that individuals with these conditions have a greater probability of kidney problems and poorer quality of life.

Nonetheless, there isn't quite as much of details on acute decompensation from enduring a couple of illness at the same moment. These risks can be attributed to our case in a clinical way. The fact that the infections emerged one after the other is a key finding that implies that the metabolic requirements of multiple infections can profoundly upset a vulnerable calcium balance. This hadn't previously addressed in the background of hypoparathyroidism after surgery to repair the thyroid.

Viruses can represent an entirely distinct kind of concern than other variables that can cause stress. Unlike an isolated stressful event, a series of infections hinder the immune system from completely recuperating, which keeps it in a catabolic state and keeps micronutrients from balancing out. This renders our case different from others where hypocalcaemia has been brought about by a single event, like viral sepsis or abstaining for an extended period.

Limitations

since this is an isolated case study, our results can't be used in other circumstances. We can only draw an inference about an association between causes and effects based on the order of incidents in chronology. Further variables, like temporary malabsorption or temporary non-adherence (which the patient dismissed), are still possible.

4. Conclusion and Implications for Practice

This case has significant implications on how medical professionals do their profession. It's important to bear in mind that "stability" in chronic hypoparathyroidism is relative and could be rapidly vanished when the thyroid gland is under a lot of distress. Active guidance is very important for medical professionals who handle the care patients who have had thyroid surgical procedures, especially those who already understand they have hypoparathyroidism. Patients should be instructed to

- Recognize early symptoms of hypocalcemia (e.g., paresthesia, muscle twitching).
- Make a "sick-day" plan prior to of time with their endocrinologist. This plan could include temporarily raising the daily dose of calcium they ingest and reviewing their serum calcium levels more promptly than planned during any significant illnesses.
- Seek prompt medical attention if symptoms progress or signs of tetany develop.

The subsequent study needs to concentrate on prospective studies which investigate into how prevalent and how viral-induced hypocalcaemia affects this specific category of patients so that practical recommendations can be established for how individuals can avoid it even though they are also symptomatic

Compliance with ethical standards

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Disclosure of conflict of interest

The authors declare that there are no conflicts of interest regarding the publication of this paper. No financial or personal relationships with other people or organizations have inappropriately influenced this work.

Statement of ethical approval

Ethical approval for the publication of this case report was granted by the Institutional Review Board (IRB) of the Royal Medical Services, Jordan (JRMS-IRB), on 22 December 2025. Written informed consent was obtained from the patient for their anonymized information to be published.

Artificial Intelligence (AI) Assistance Declaration

The authors declare that no generative AI tools (e.g., ChatGPT, etc.) were used in the conceptualization, data analysis, or drafting of the original manuscript. AI-assisted technology was used only during the final preparation of the manuscript for language polishing, grammar checking, and reference formatting, strictly to improve readability and technical presentation. The authors are solely responsible for the scientific content, accuracy, and integrity of the work.

References

[1] Agus, Z. S. (1999). Hypomagnesemia. Journal of the American Society of Nephrology, 10(7), 1616–1622.

[2] Bollerslev, J., Rejnmark, L., Marcocci, C., Shoback, D. M., Sitges-Serra, A., van Biesen, W., and Dekkers, O. M. (2015). European Society of Endocrinology Clinical Guideline: Treatment of chronic hypoparathyroidism in adults. European Journal of Endocrinology, 173(2), G1–G20. https://doi.org/10.1530/EJE-15-0628

[3] Cappellani, F., Manetti, R., Urbani, C., Lupi, S., and Di Muro, M. (2020). Hypocalcemia in COVID-19: A prognostic marker for severe disease. Endocrinology, Diabetes and Metabolism Case Reports, 2020, 20-0115. https://doi.org/10.1530/EDM-20-0115

[4] Edafe, O., Antakia, R., Laskar, N., Uttley, L., and Balasubramanian, S. P. (2014). Systematic review and meta-analysis of predictors of post-thyroidectomy hypocalcaemia. British Journal of Surgery, 101(4), 307–320. https://doi.org/10.1002/bjs.9384

[5] Merzon, E., Tworowski, D., Gorohovski, A., Vinker, S., Golan Cohen, A., Green, I., and Frenkel-Morgenstern, M. (2020). Low plasma 25(OH) vitamin D level is associated with increased risk of COVID-19 infection: An Israeli population-based study. The FEBS Journal, 287(17), 3693–3702. https://doi.org/10.1111/febs.15495

[6] Sun, J. K., Zhang, W. H., Zou, L., Liu, Y., Li, J. J., Kan, X. H., ... and Li, Y. (2021). Serum calcium as a biomarker of clinical severity and prognosis in patients with COVID-19. Aging, 13(8), 11270–11281. https://doi.org/10.18632/aging.202807

[7] Underbjerg, L., Sikjaer, T., Mosekilde, L., and Rejnmark, L. (2014). The epidemiology of nonsurgical hypoparathyroidism in Denmark: A nationwide case finding study. Journal of Bone and Mineral Research, 30(9), 1738–1744. https://doi.org/10.1002/jbmr.2501

[8] Zhou, C., Chen, Y., and Ji, Y. (2020). The role of IL-6 in the pathogenesis of COVID-19-related endocrine complications. Frontiers in Endocrinology, 11, 573646. https://doi.org/10.3389/fendo.2020.573646