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**Mini-Review**

# Cinacalcet in patients with primary hyperparathyroidism; a review

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**Abstract**

Primary hyperparathyroidism (PHPT) is a condition characterized by the parathyroid glands' overproduction of parathyroid hormone (PTH). These increases calcium levels in the blood, leading to various symptoms and complications. Cinacalcet is a promising therapeutic option for patients with PHPT who are unable or unwilling to undergo surgery. It effectively reduces serum calcium and PTH levels, improving biochemical markers of bone turnover and renal function. However, more research is needed to determine the optimal dosage, duration, and long-term effects of cinacalcet treatment in this patient population. Clinicians should carefully consider the risks and benefits of cinacalcet therapy individually and involve patients in shared decision-making.

**Keywords:** Cinacalcet, Primary hyperparathyroidism, Bone turnover, Parathyroid hormone

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## Introduction

Primary hyperparathyroidism (PHPT) is a disorder characterized by excessive production of parathyroid hormone (PTH) by the parathyroid glands, leading to elevated levels of calcium in the blood (1). Cinacalcet is a medication that acts as a calcimimetic, meaning it mimics the action of calcium on the parathyroid gland and reduces PTH secretion. Several clinical trials have evaluated the efficacy and safety of cinacalcet in PHPT patients (2). These studies have shown that cinacalcet can effectively lower PTH levels and improve markers of bone health, such as bone mineral density. Additionally, cinacalcet has been shown to decrease serum calcium and urinary calcium excretion, which can help prevent hypercalcemia's long-term complications (3). However, it is important to note that cinacalcet is not suitable for all patients with PHPT. It is primarily used in individuals who are unsuitable for surgery or those who prefer non-surgical management. Additionally, cinacalcet may not be as effective in individuals with severe hypercalcemia or those with certain underlying conditions (4,5). Like any medication, cinacalcet has potential side effects. Common adverse effects include gastrointestinal symptoms, such as nausea and vomiting, as well as muscle aches and fatigue. Patients taking cinacalcet should be closely monitored for these side effects and changes in calcium and PTH levels (6). This mini-review paper summarizes the current data on cinacalcet therapy in patients with PHPT.

## Search strategy

For this review, we searched PubMed, Web of Science, EBSCO, Scopus, Google Scholar, Directory of Open Access Journals (DOAJ), and Embase, using different keywords such as cinacalcet, primary hyperparathyroidism, bone turnover, parathyroid hormone.

## Administration of cinacalcet in PHPT

Primary hyperparathyroidism is a condition characterized by the overactivity of the parathyroid glands, which are small glands located in the neck that produce PTH. PTH helps regulate calcium levels in the body by acting on the bones, kidneys, and intestines (1,7). In PHPT, there is excessive production of PTH, leading to increased calcium levels in the blood, a condition known as hypercalcemia. Hypercalcemia can cause various symptoms, such as fatigue, bone pain, kidney stones, muscle weakness, gastrointestinal issues, and even psychiatric disturbances (8,9). The main treatment for PHPT is surgical removal of the affected parathyroid gland(s). However, surgery might not be suitable for all patients, especially those who are unfit for surgery or choose not to undergo it (10,11). In such cases, pharmacological interventions like cinacalcet may be considered as an alternative or adjunct therapy. Cinacalcet is a medication that increases the sensitivity of the calcium-sensing receptors on the parathyroid glands. Doing so reduces the release of PTH, leading to lower levels of calcium in the blood. Cinacalcet is typically taken

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### Implication for health policy/practice/research/medical education

Cinacalcet is a promising treatment option for patients with primary hyperparathyroidism. It can effectively lower serum calcium and PTH levels, relieving symptoms and potentially preventing complications. However, further research is needed to fully understand the long-term effects and optimal use of cinacalcet in this patient population

orally in the form of tablets (6,12).

## Conclusion

Cinacalcet is an effective treatment option for patients with PHPT, especially those who cannot undergo surgery or have severe hypercalcemia. It can help to reduce PTH levels, normalize serum calcium levels, and improve bone health. However, further research is needed to determine its long-term efficacy and safety profile in this patient population.

### Conflicts of interest

The author declares that he has no competing interests.

### Ethical issues

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