



INTRODUCTION

- Neuropsychiatric symptoms (NPS) are well-known sequelae of primary hyperparathyroidism/hypercalcemia (PHPT/HC).¹
- NPS in PHPT/HC are generally treated psychiatrically (secondarily) as opposed to via parathyroidectomy (PTx). PTx is the definitive treatment for patients with PHPT, NPS, however, are not currently included in the criteria for PTx.²
- We present a case of catatonia with rapid remission after PTx in the context of prolonged PHPT and hypercalcemia (HC).

CASE SUMMARY

- Ms. M is a 67-year-old woman with a long-standing psychiatric history since 2002. At onset, mild HC of 11 mg/dL was noted; in 2006, she was diagnosed with PHPT caused by a left-sided parathyroid adenoma.
- Ms. M underwent 16 inpatient medical and/or psychiatric hospitalizations over the next 20 years, with a deteriorating course. Several of these lasted for months.
- She was diagnosed with: major depressive disorder w/ psychotic features; bipolar I disorder; schizoaffective disorder; catatonic schizophrenia; and finally, advanced dementia. She lost decisional capacity over the years, and her son was appointed as her guardian.
- Ms. M and her son repeatedly refused PTx, even though she had failed multiple trials of antidepressants, antipsychotics, mood stabilizers (Table 1) and multiple sessions of electroconvulsive therapy (ECT). The length of Ms. M's hospitalizations kept increasing (up to 10 months) until she eventually required care in a nursing home.
- During her most recent hospitalization in 2021, Ms. M was admitted for failure to thrive, and presented as catatonic. Her Bush-Francis score (BFS) was 22. HC was corrected using IV calcitonin and cinacalcet (Figure 1), with partial improvement in her NPS. However, this improvement only lasted for 2 weeks after she resisted further treatment. Ms. M's son eventually approved PTx, which finally allowed her to achieve normal serum calcium (Figure 1).
- Subsequently, BFS improved to 7 on postoperative day 1 with continual improvement in mental status; she was stable for discharge on post-op day 10.

It is estimated that up to 25% of patients with PHPT suffer from psychiatric symptoms.¹

Neuropsychiatric symptoms are not included in criteria for parathyroidectomy (PTx).²

Patients with psychiatric symptoms are considered to be “asymptomatic” if they do not meet standard surgical criteria.^{1,2}

Our case — and other historical cases in Table 2 — indicate that severe NPS can result from mild and prolonged HC.

We found rapid remission of catatonia after PTx. The cases in Table 2 demonstrated similar results.

Table 1

Antipsychotics	
1 st gen: Haloperidol, fluphenazine, loxapine	
2 nd gen: Risperidone, quetiapine, aripiprazole, olanzapine	
Antidepressants:	
SSRI: Fluoxetine, sertraline, citalopram	
Non SSRI: Mirtazapine, venlafaxine, bupropion	
Mood stabilizers:	
Trileptal, valproic acid, lithium	
Other:	
Lorazepam, benztropine, cyproheptadine	

Figure 1

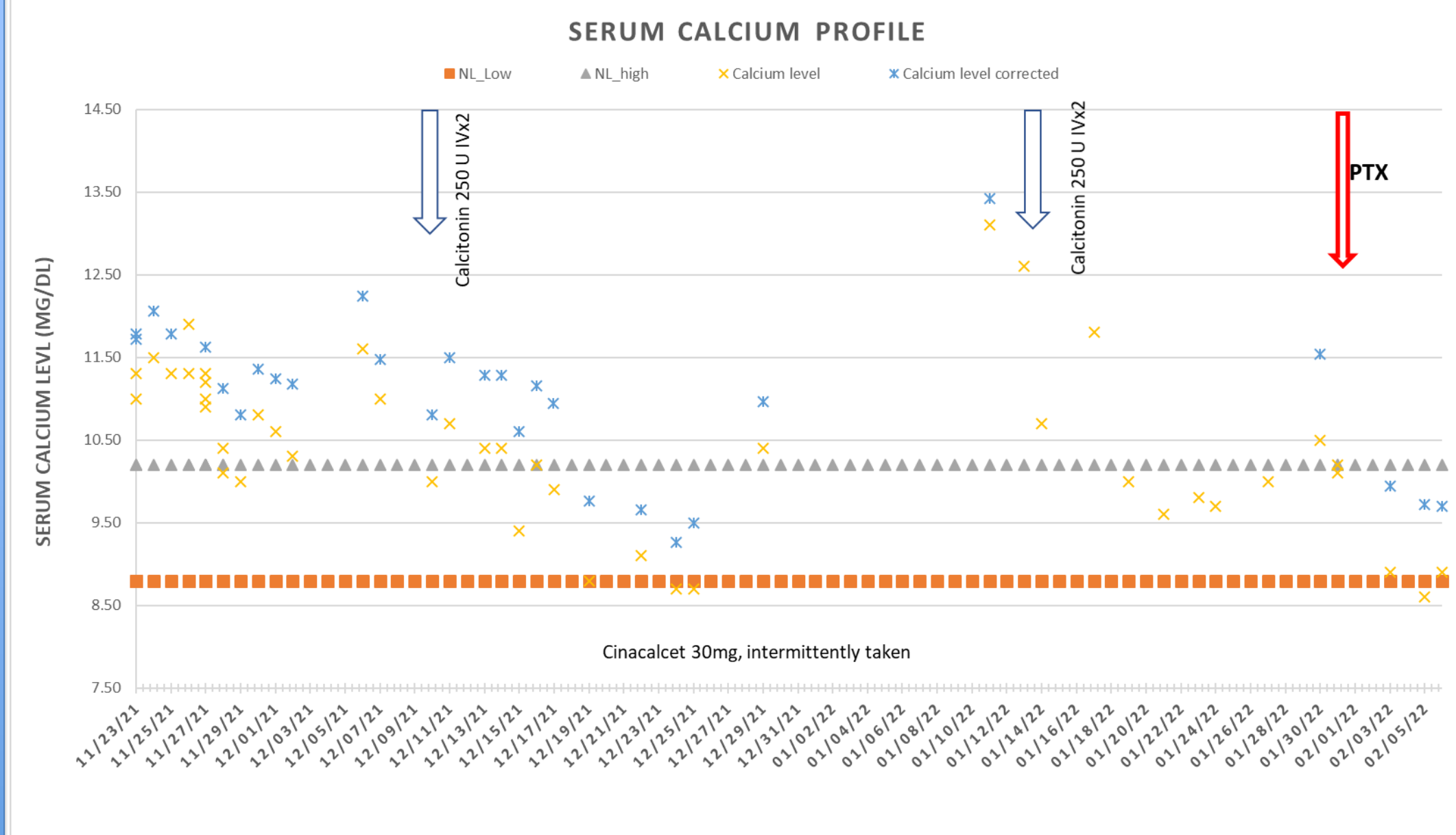


Table 2

Ref.	Patient age (YO)	Calcium range (mg/dL)	Psychiatric treatment	Outcome	PTx	Outcome
Ms. M	47-67	10.8-11.8	Multiple medication trials + ECT	Brief & marginal improvement, or no effect at all	✓	Quick & complete resolution
3	75	11.9 – 14.6	Imipramine 10 mg IM TID	Memory & psychomotor retardation improved	✓	Quick & complete resolution
4	64	11.0 – 13.8	Fluphenazine 2.5 mg qd	Depression and paranoia improved	✓	Resolved, then calcium rose → suicide
5	56	11.8 – 12.6	Unspecified	Unclear	✓	Gradual resolution

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DISCUSSION

- Untreated PHPT and mild HC clearly contributed to Ms. M's presentation. **Her clinical course was consistent with prior studies reporting improvement of NPS after PTx for PHPT.**^{3,4,5}
- Predominant NPS in PHPT is not currently a selection criterion for PTx². Based on our case, and the case reports listed in Table 2, **we strongly support inclusion of NPS as a criterion for PTx**, even in the absence of “classic” PHPT signs.
- The remission of catatonia after PTx highlights the pivotal role that PHPT/HC may play in the pathogenesis of NPS. Patients' rapid improvement after PTx suggests that PTH/HC has an acute *but reversible* effect on cerebral dysfunction.
- This case also indicates that severe NPS can result from mild, prolonged HC.
- A multidisciplinary approach in the management and monitoring of PHPT/HC is essential.