Hungry Bone Syndrome: A series of 41 parathyroidectomies

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Background

Hungry Bone Syndrome (HBS) is a potentially serious consequence of parathyroidectomy, seen in patients with undergoing surgery with primary hyperparathyroidism (PHPT) and preoperative high bone turnover. It is characterised by rapid-onset but prolonged hypocalcaemia, usually associated with hypophosphataemia and hypomagnesaemia. Severe hypocalcaemia is associated with increased neuromuscular activity and irritability, clinically manifesting in perioral and peripheral paraesthesias, carpopedal spasms, and in more severe cases generalised convulsions and cardiac dysfunction.

There are limited data to support or refute the use of prophylactic strategies to prevent HBS in patients with primary hyperthyroidism undergoing parathyroidectomy. The benefit of any prophylactic treatment must be weighed against risks and costs of these treatments; this is highly dependent on the true incidence of the condition to be prevented. There is vast disparity in the incidence of HBS cited by previous studies, with reported rates ranging from 4% to 92%.¹⁻⁴ The purpose of this study was to report our experience of hungry bone syndrome in an ENT department based in a district general hospital in the United Kingdom.

Method

This retrospective study included all patients who underwent parathyroidectomy at Leighton Hospital between November 2015 and July 2017. Data were extracted from patient case notes and electronic databases at the centre.

All procedures were either performed personally or directly supervised by a single consultant otolaryngologist. Minimally invasive parathyroidectomy using a focused lateral approach with a 2-cm horizontal skin incision was offered to patients, with extension to neck exploration if necessary. Patients did not receive any pre-operative or peri-operative prophylaxis for hungry bone syndrome.

References

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Results

Study population

41 patients underwent parathyroidectomy in the study period; 26 female and 15 male (M:F ratio 1.73:1), ranging in age from 34 to 86 years (mean 65.7 ± 11.6 years). All cases were performed for primary hyperparathyroidism. Presenting symptoms are listed below:

Presenting complaint	n	%
Bone pain	15	36.6
Low mood/depression	9	22.0
Renal calculi/nephrocalcinosis	11	26.8
Lethargy/non-specifically unwell	4	9.8
Incidentally identified hypercalcaemia	3	7.3
Hypertension	2	4.9

Peri-operative investigations

Preoperative localisation was performed using ultrasonography (n=41, sensitivity 43.9%) and MIBI with SPECT/CT (n=37, sensitivity 89.2%). 33 patients (80.5%) underwent MIP; 8 (19.5%) underwent neck exploration. Intraoperative PTH monitoring was performed in most cases (85.4%); and in all cases who had intraoperative PTH, more than 50% reduction in PTH was found within 10 minutes following gland excision. Histopathology revealed parathyroid adenoma in 35 cases (85.4%), with parathyroid hyperplasia in 4 cases (9.8%), 1 incidence of carcinoma (2.4%) and no parathyroid tissue in one case (2.4%).

Post-operative hypocalcaemia

No patients were found to have clinical signs or symptoms of hypocalcaemia post-operatively. Furthermore, there were no cases of biochemical hypocalcaemia on the first or fourth post-operative days (day one mean serum calcium 2.45±0.17 mmol/l, day four mean serum calcium 2.43±0.13 mmol/l) nor at six weeks following surgery (mean serum calcium 2.38±0.13 mmol/l).

Conclusions

- This study found no incidences of hungry bone syndrome following 41 parathyroidectomies
- Its incidence following minimally invasive parathyroidectomy for primary hyperparathyroidism is probably very low.
- We do not recommend any peri-operative prophylactic regimens or empirical post-operative treatments for hungry bone syndrome.