Low bone mineral density increases the risk of transient hypocalcemia after total thyroidectomy

Ju Hee Han, Jong-Lyel Roh, Seung-Ho Choi, Soon Yuhl Nam, and Sang Yoon Kim.
Department of Otolaryngology, Asan Medical Center, University of Ulsan College of Medicine, Seoul, Korea

ABSTRACT

INTRODUCTION

Table 2. Relation between bone mineral density of spine and hypocalcemia after total thyroidectomy

The occurrence of hypocalcemia after total thyroidectomy has been reported being related to the hypoparathyroidism caused by the surgical resection of one or more parathyroid glands during surgery. We suggested that another important factor for the development of transient hypocalcemia is the decreased bone mineral density due to the bone, which might induce transient hypocalcemia. The aim of this study was to determine the relationship between the occurrence of hypocalcemia and the transient hypocalcemia in total thyroidectomy patients.

A retrospective review of 75 patients undergoing total thyroidectomy with or without central neck dissection for thyroid papillary cancer between May 2005 and April 2008 and preoperative DXA (dual-energy x-ray absorptiometry) scans were analyzed. The status of BMD was estimated by DXA scans. The results of our study implied that the BMD of spine and femoral neck was a significant factor for the development of transient hypocalcemia after total thyroidectomy.

METHODS AND MATERIALS

Table 3. Relation between bone mineral density of femur (total) and hypocalcemia after total thyroidectomy

75 patients who underwent total thyroidectomy with or without central neck dissection for papillary thyroid cancer between May 2005 and April 2008 were reviewed retrospectively. Total calcium levels were measured before surgery and daily for 1 year postoperatively. Biochemical hypocalcemia was defined as a serum calcium level under 8.0 mg/dL on at least two consecutive measurements, and symptomatic hypocalcemia as developing clinical symptoms (paresthesia) together with biochemical hypocalcemia. Transient hypocalcemia was defined as lasting less than 1 year, and permanent hypocalcemia as lasting 1 year or longer.

The bone mineral density (BMD) was measured by DXA (dual-energy x-ray absorptiometry) scan, and the score (g/cm²) of spine and femoral neck was recorded. We analyzed the relation of preoperative bone mineral density (BMD) and the occurrence of hypocalcemia. The performance of central neck dissection, autotransplantation of parathyroid, and T-score of DXA scan were evaluated.

CONCLUSIONS

Lower BMD could be one most important risk factor to predict the symptomatic hypocalcemia after total thyroidectomy, and the elderly patients having decreased BMD must be monitored carefully to notice the development of transient symptomatic hypocalcemia.

REFERENCES


Table 1. Patient characteristics

Table 2. Relation between bone mineral density of spine and hypocalcemia after total thyroidectomy

BMD of spine (g/cm²) p-value
Biochemical hypocalcemia
Yes 1.059 < 0.190
No 1.119 < 0.173

Table 3. Relation between bone mineral density of femur (total) and hypocalcemia after total thyroidectomy

BMD of femur (g/cm²) p-value
Biochemical hypocalcemia
Yes 0.849 < 0.121
No 0.894 < 0.126

Table 4. Risk factors of hypocalcemia after total thyroidectomy

Hypocalcemia
Symptomatic hypocalcemia
BMD of spine (g/cm²) p-value
Biochemical hypocalcemia
Yes 0.986 < 0.171
No 1.127 < 0.172