Primary Hyperparathyroidism with Disorder of the Temporomandibular Joint

Saburo Kakuta, Yoko Omura and Masao Nagumo

The Second Department of Oral and Maxillofacial Surgery, School of Dentistry, Showa University (Chief : Prof. Masao Nagumo)

Abstract: A case of primary hyperparathyroidism with dull pain of the temporomandibular joint and limitation of mandibular movement is described. These symptoms appeared after the patient had luxation of the left mandibular condyle in 1971. Radiographs of jaws and teeth did not disclose significant abnormalities except for erosion of the left condyle. Immunological and biochemical investigations of serum revealed that the patient suffered from primary hyperparathyroidism.

1. Introduction

Hyperparathyroidism is a disorder caused by excess production and liberation of parathyroid hormone (PTH). The common lesion of bone in hyperparathyroidism is generalized osteoporosis with cortical bone resorption, which is occasionally accompanied by pain. Usual radiographic abnormalities in the jaws are development of a cyst-like radiolucency and disappearance of lamina dura around the teeth. An unusual case of primary hyperparathyroidism is described in which there were none of the clinical symptoms usually associated with the disease except the disorder of the temporomandibular joint (TMJ).

2. Case

A 50-year-old woman was referred to our hospital on March 4, 1986 complaining of dull pain and limitation of left TMJ movement. The symptoms appeared after luxation of left condyle in 1971 and had gradually intensified. She had a leg fracture when 16 years old, a finger fracture at 43 years old, and kidney stones at 24 years old. She had often suffered from luxation of the shoulder joint since childhood. There were no similar findings in family history.

Clinical examination revealed an emaciated woman with symmetric face. Swelling of the neck region was not found. Since she had lost several molars due to caries and marginal periodontitis, marked overbite was observed. Radiographs of jaws and teeth did not disclose significant abnormalities except for marked erosion of the right condyle (Fig. 1). Results of routine laboratory investigation such as urine and serum were within normal limits, except for high calcium (Ca) concentration, low phosphorus (P) concentration and high level of alkaline phosphatase (ALP) activity in serum (Table 1). As medical history and laboratory findings were highly suggestive of hyperparathyroidism, the concentrations of PTH and 1,25(OH)2 vitamin D3 in serum were measured. The concentration of PTH was 2.0 ng/ml (normal: <0.5 ng/ml) and that of 1,25(OH)2 vitamin D3 was 73 pg/ml (normal: 20 to 76 pg/ml) (Table 1). These concentrations strongly suggested primary hyperparathyroidism. The patient was then referred to an endocrinologist. Radioscintigram and ultrasonic diagnosis revealed the presence of a tumor of the left upper parathyroid gland, and the patient was diagnosed as suffering from primary hyperparathyroidism. The patient underwent surgical removal of the tumor on August 1, 1986. The pathological finding of the tumor was compatible with that of adenoma. The postoperative process was uneventful and the levels of serum calcium, phosphorus and alkaline phosphatase activity recovered to normal ranges (Fig. 2).
3. Discussion

Hyperparathyroidism, which occurs due to hypersecretion of PTH, is an alteration in the homeostasis of calcium and phosphorus that affects bone metabolism. Clinical, radiographic and routine laboratory findings are not alone sufficient to support the diagnosis of hyperparathyroidism. However, it is possible to distinguish hyperparathyroidism from other diseases by measuring the level of serum PTH and such finding in this patient led to diagnosis.

At present, hyperparathyroidism is categorized into two types: primary hyperparathyroidism resulting from tumor or hyperplasia of the parathyroid gland, and secondary hyperparathyroidism resulting from a drop in serum calcium level. Secondary hyperparathyroidism is chiefly caused by vitamin D deficiency or chronic renal disease. In view of this patient’s history of kidney stones, chronic renal disease was first suspected. However, analyses of the levels of 1,25(OH)₂ vitamin D₃, serum calcium, BUN, serum creatinine, and urine suggested primary hyperparathyroidism. The diagnosis was confirmed by medical diagnostic imagings and histological examination.

Radiographic evidence of hyperparathyroidism on the TMJ has not been well documented. The usual lesion in bone is a generalized osteoporosis with cortical bone resorption, which is occasionally accompanied by pain. In the changes to the jaws and teeth, there are many reports¹⁻⁴) that described apparent disappearance of lamina dura and increase of an irregular cystic area, although no deformity has been reported in the mandibular
condyle. In this case, the most significant radiographic finding in the jaw was erosion of the right mandibular condyle, whereas loss of lamina dura around the teeth and cystic changes in the mandible or abnormalities in the cortical bones were not apparent. Such deformity of the mandibular condyle is frequently observed in advanced chronic rheumatoid arthritis (RA)\(^5\). However, this patient had no history of RA and her rheumatoid factor was negative. As for the etiology of the erosion, two interpretations might be considered. The first is that the disorder of the TMJ could be independent of hyperparathyroidism and only local factors may be responsible for the induction and advancement of the erosion of the mandibular condyle. Because the erosion was observed on only one side of the TMJ, there were no apparent radiographic features showing characteristics of the disease. The alternative explanation is that local factors and hyperparathyroidism may both contribute to the condyle erosion. Specifically, local factors may be related to the induction and later to the advancement of the erosion. We think the second explanation may be probable in this case, because hypersecretion of PTH from the parathyroid gland usually accelerates bone resorption and such a severe erosion of the condyle is not observed in patients with usual TMJ disorder. We can not, however, comment on whether or not the fractures of leg and finger and luxation of the shoulder joint are associated with the disease, as we had no laboratory data at those times.

4. Conclusion

Laboratory investigation of a patient who had dull pain of the TMJ and limitation of temporomandibular movement indicated that she suffered from hyperparathyroidism. Radiographs did not disclose any significant abnormalities in jaws and teeth except for erosion of the right condyle. For the diagnosis of this disease, the measurement of calcium, phosphorus, ALP, PTH and \(1,25(OH)_{2}\) vitamin D\(_3\) levels in the serum is useful.

References


(Received November 29, 1991)