Ectopic Choroidal Calcification of the Eyes of a Patient with Parathyroid Adenoma

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A 39-year-old man was admitted to our hospital complaining of general malaise, polyuria, disturbance of ocular movement and right cervical tumor. Blood examination revealed increased parathyroid hormone, hypercalcemia and hypophosphatemia, suggestive of hyperparathyroidism. Histology of the resected tumor revealed a benign parathyroid adenoma. Ectopic calcifications in the choroid and sclera were noted by computed tomography and further ophthalmological examination. Although ocular calcification in conjunctiva and cornea associated with hyperthyroidism is not unusual, sclerochoroidal calcification has not been reported previously in Japan. The possible cause of this unusual condition in this patient is discussed.

Key words: hyperparathyroidism, hypercalcemia

Introduction

Metastatic calcification of eyes occurs secondary to hypercalcemia of systemic disease (1, 2), and usually occurs in conjunctiva or cornea. We herein report a rare case of sclerochoroidal calcification in a patient with hyperparathyroidism associated with parathyroid adenoma.

Case Report

A 39-year-old man who had been under a general physician’s care with complaints of general malaise, polyuria, disturbance of ocular movement and hypertension was referred to our department on May 29, 1991 because of cervical tumor.

On admission, his pulse rate was 79/min, body temperature 37.2° and blood pressure 124/90 mmHg. Neither anemia nor jaundice was observed in the conjunctiva. A hard, but smooth surfaced, fowl egg sized tumor was palpable in his neck at the right lower side of the thyroid. No other abnormalities were observed on physical examination. Also, no abnormalities were found in laboratory examination data, including complete blood count, urinalysis, occult blood in stool, coagulofibrinolysis, CRP and tumor markers such as AFP, CEA, CA19-9. However, examination of blood chemistry showed elevated values of alkaline phosphatase (528 IU/l) and calcium (15.0 mg/dl), and a decrease in the phosphorus level (1.3 mg/dl). The blood and urine endocrinological tests showed normal function of thyroid and an elevated carboxyl terminal parathyroid hormone (PTH-C) level at 3.0 ng/ml. The cAMP level in the urine was elevated 17.0 pM/ml. On the basis of these findings, hyperparathyroidism was suspected.

Chest X-ray films showed a tracheal deviation toward the left side due to the tumor, but no abnormal finding was noted in bilateral lung fields. Echogram, computed tomography, and magnetic resonance imaging revealed that the tumor (3 x 3 x 3 cm) had a homogenous pattern and was encapsulated; it was located at the posterior portion of the right thyroid lobe. There was no evidence of invasion toward surrounding organs (Fig. 1), suggesting that the tumor was of benign origin. No cervical lymph node swelling was noted. The X-ray examination of the bones showed subperiosteal resorption especially in the limbs. Bilateral renal calcification was recognized by abdominal X-ray and echogram examination.

Brain and orbital computed tomography, performed because of headache and disturbance of ocular movement, showed bilateral high-density lesions in the posterior walls of both eyes with no abnormal finding in the brain (Fig. 2). Further ophthalmological evaluation was performed to identify the locus of the calcification.
The visual acuity was normal in both eyes with best correction, but fundoscopic examination in the right eye showed slightly elevated yellowish-white and circular thickening lesion with an ill-defined margin, 4 x 2 disc diameter in the choroid of the superior nasal region and a solid yellow plaque, 1 x 1 disc diameter was also seen above the superior temporal region close to the insertion of the superior oblique muscle. In the left eye, a similar lesion was seen above the superior temporal region. (Fig. 3). However, overlying conjunctiva, retina and cornea were intact. Fluorescein angiography showed circular choroidal blocking in the same areas. These findings indicated that the calcification was located in the choroid and partially in sclera. After admission, general malaise, headache and hypercalcemia aggravated rapidly in spite of adequate infusion, diuretic treatment and other supportive therapies. Therefore, resection of the tumor was performed on the 10th hospital day; the pathological diagnosis of the resected tumor was a benign parathyroid adenoma. After surgery, he quickly recovered from the illness with correction of the serum calcium (8.8 mg/dl), phosphate (3.0 mg/dl), PTH-C and cAMP level (1.3 pM/ml) in the urine. He was discharged our hospital on the 42nd hospital day, and the course after discharge has been satisfactory to the present.

**Discussion**

Ocular calcification is frequently involved in conjunctiva and cornea of elderly persons (1, 2) as a local degenerative change. A similar lesion also occurs in systemic hypercalcemia which is quite often associated with multiple calcifications in other organs, such as the kidney and pancreas. The underlying conditions for this systemic hypercalcemia are hyperparathyroidism (2, 3), vitamin D intoxication (4), sarcoidosis and rheumatoid arthritis (5). In the present case, hyper-
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calcification with hypercalcemia tends to occur at the location of the insertion of the superior oblique muscle, and speculated that it is related to longstanding chronic tension of this muscle.

In this context, it was thought that the occupation of the present case, a computer programming, might be responsible for the unusual calcification of the choroidal plexus, since the insertion of the superior oblique muscle is close to the choroid and chronic tension is caused by gazing at the display of a computer. Pathological status which should be differentiated from choroidal calcification include choroidal osteoma, metastatic choroidal carcinoma and choroidal Nevis.

Choroidal osteoma usually affects young females, has a single lesion and is located in the juxtapapillary or papillomacular region. By fluorescein angiography, choroidal osteoma demonstrates extensive hyperfluorescence from the choroid and sometimes causes serious retinal detachment. In metastatic choroidal tumors, the lesions are generally large, more elevated and are usually associated with serious retinal detachment. Systemic evaluations help to determine the differential diagnosis. Choroidal nevus, in particular amelanotic choroidal nevus, occasionally shows similar findings, but it does not disclose a high reflectivity with ultrasonography nor high density in CT. Therefore, the present case is clearly different from those diseases, and it is the first report in Japan of a case of ectopic choroidal calcification in a patient of parathyroid adenoma.

References