Emergency parathyroidectomy for severe symptomatic hypercalcemia due to primary hyperparathyroidism; a case report

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ABSTRACT
Primary hyperparathyroidism is a common endocrine abnormality and is rarely seen in the pediatric population. Patients may present with nonspecific symptoms such as abdominal pain, nausea, fatigue, muscle weakness or paresthesia, gait disturbance, general condition disorder, which mimic many diseases. In this case report, a 13-year-old male patient who underwent emergency parathyroidectomy is discussed. The patient in this case report was admitted to the Emergency Department with complaints of fever, malaise, severe fatigue, frequent urination and nausea. Medical treatment was administered with a diagnosis of upper respiratory tract infection. After medical treatment, there was no regression in his complaints and he was admitted to the emergency room again. Further tests were performed and primary hyperparathyroidism was diagnosed. Emergency parathyroidectomy was performed because his symptoms and hypercalcemia persisted despite medical treatment for hyperparathyroidism. Emergency parathyroidectomy is an effective treatment option in patients with persistent hypercalcemia and related symptoms despite medical treatment.

Keywords: *Primary hyperparathyroidism, hypercalsemia, parathyroidectomy.*

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INTRODUCTION

Primary hyperparathyroidism (pHPT) is caused by abnormal, poorly regulated secretion of parathormone (PTH) by one or more parathyroid glands [1]. Parathyroid glands with abnormal function both increase in size and secrete PTH at levels inappropriate relative to circulating ionized calcium levels. High levels of PTH bind to receptors in bone tissue, leading to increased osteoclastic activity and high levels of calcium entering the bloodstream. In addition, high levels of PTH increase calcium absorption from the digestive and renal systems by increasing the formation of 1,25-dihydroxyvitamin D, the most active form of vitamin D. As a result, blood total and ionized calcium levels increase [2].

pHPT is a common endocrine disorder among endocrine anomalies. The definitive diagnosis is made with high calcium levels and concomitant high PTH levels in a patient with normal renal function. pHPT is frequently seen in patients between 50 and 60 years of age. The annual incidence is approximately 30/100.000 [3]. pHPT is rare in the pediatric population, with an incidence of 2-5/100.000 [4]. pHPT patients are often asymptomatic and diagnosed incidentally. Symptomatic pHPT patients usually present with bone and muscle pain, weakness, nausea, vomiting, abdominal pain, chronic fatigue, polyuria, difficulty concentrating, osteopenia, osteoporosis, pancreatitis, nephrolithiasis secondary to hypercalcemia [5].

In this case report, a 13-year-old pediatric male patient with pHPT who underwent emergency parathyroidectomy due to severe hypercalcemia symptoms refractory to medical treatment was discussed in the light of the literature.

CASE REPORT

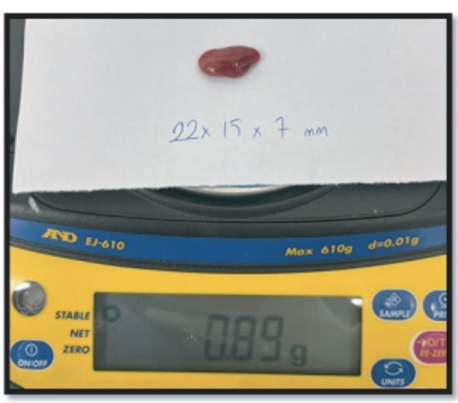
This study was conducted in accordance with the Declaration of Helsinki, with the written consent of the patient for scientific study. In this case report, a 13-year-old male patient who underwent emergency parathyroidectomy due to severe hypercalcemia symptoms is discussed. A 13-year-old male patient with no history of any additional disease or previous operation was admitted to the emergency department with complaints of fever, malaise, severe fatigue, frequent urination and nausea. It was learned that symptomatic medical treatment was started with a diagnosis of upper respiratory tract infection at the first presentation. It was learned that the patient was admitted to the emergency department again with similar complaints because of the lack of regression in his symptoms despite ten days

of medical treatment and he was admitted to the pediatric service after his **calcium** value was found to be 14 mg/dL in blood tests. The **calcium** value of the patient was found to be normal approximately 2 years ago and 12.9 mg/dL 9 months ago. There was no history of malignancy and endocrine disease in the patient's family history.

Physical examination revealed that the growth curve was in the normal percentile range. The patient's medical treatment was started with IV hydration and necessary fluid replacement followed by loop diuretic. The patient's serum PTH level was 205 ng/L. Technetium-99 sestamibi scintigraphy showed focal activity uptake in the left inferior posterior part. Neck ultrasonography (USG) revealed a smoothly circumscribed hypoechoic solid lesion measuring 8.5 x 6 x 22 mm in size in the inferior neighborhood of the left lobe of the thyroid, consistent with the localization of the scintigraphy. Abdominal USG revealed a 5-mm calcula in the middle calyx of the left kidney. No osteopenia/osteoporosis was detected. There was no significant improvement in calcium levels after medical treatment. The patient's hypercalcemia symptoms persisted despite medical treatment and an emergency operation was planned on the 7th day of hospitalization. Preoperative calcium value was 13.9 mg/dL.

Parathyroidectomy was performed under general anesthesia with a minimally invasive technique via lateral approach. IONM confirmed normal left recurrent laryngeal nerve impulse conduction. The size of the parathyroidectomy specimen was 22x15x7 mm and the weight was 0.89 gram. The image of the parathyroidectomy specimen is shown in Figure 1.

Figure 1. Parathyroidectomy specimen image.



No perioperative complications were observed and serum PTH was measured at the 6th hour postoperatively: 7 ng/L, **calcium**: 11.6 mg/dL. Calcium values obtained on postoperative days 1 and 2 were 8.9 mg/dL and 9 mg/dL, respectively. Hypercalcemia symptoms completely resolved from postoperative day 1 and the patient was discharged with surgical cure on postoperative day 3. The pathologic examination of the parathyroidectomy specimen was reported as 'parathyroid adenoma/adenomatous hyperplasia'.

CONCLUSION

Hypercalcemia is a clinical picture characterized by nonspecific symptoms such as bone and muscle aches, weakness, nausea, vomiting, abdominal pain, chronic fatigue, polyuria, difficulty in concentration and may be confused with symptoms of many diseases. The etiology of hypercalcemia varies according to age in the pediatric patient population and conditions such as familial hypocalciuric hypercalcemia, subcutaneous fat necrosis, Williams syndrome, pHPT, malignancy, granulomatous disease and vitamin D intoxication should be considered in the differential diagnosis [6]. Although it is a rare disease in the pediatric population, it should be kept in mind in the differential diagnosis of pHPT in which the definitive treatment is surgery unlike other diseases. In pediatric patients diagnosed with symptomatic pHPT, it is reported that many symptoms ranging from simple symptoms such as nausea and abdominal pain to serious symptoms such as paresthesia, gait disturbance, and severe confusion are observed. Therefore, it is very important to consider pHPT in the symptomatic differential diagnosis in pediatric patients with nonspecific symptoms in terms of early diagnosis and treatment [7].

Initial treatment of symptomatic hypercalcemia includes intravenous fluid replacement, diuretics, calcitonin and, if necessary, bisphosphonates. The only definitive treatment of pHPT, which is one of the causes of symptomatic hypercalcemia, is surgery. For PHPT patients presenting with severe hypercalcemia symptoms, prompt surgery is recommended after medical stabilization [8].

In conclusion: In the pediatric age group, pHPT should be considered in the differential diagnosis of patients presenting with nonspecific symptoms. It should be known that medical treatment should be started immediately in patients diagnosed with pHPT and emergency parathyroidectomy

is the only effective treatment in patients whose symptoms do not resolve with medical treatment.

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