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A rare cause of hypercalcemia: two cases of parathyroid adenoma

Hiperkalseminin nadir bir nedeni: paratiroid adenomu olan iki olgu

Merve Nur Hepokur[1] Meltem Özkök[2] Meltem Çağlar Oskaylı[3]
İbrahim Ali Özemir[4] Aşan Önder[1]

[1] Department of Pediatric Endocrinology, Istanbul Medeniyet University Göztepe Training and Researh Hospital, Istanbul, Turkey

[2] Department of Pediatrics, Istanbul Medeniyet University Göztepe Training and Researh Hospital, Istanbul, Turkey

[3] Department of Pediatric Surgery, Istanbul Medeniyet University Göztepe Training and Researh Hospital, Istanbul, Turkey

[4] Department of General Surgery, Istanbul Medeniyet University Göztepe Training and Researh Hospital, Istanbul, Turkey

ABSTRACT

Hypercalcemia is a rare but serious metabolic condition that may lead to end-organ damage. Primary hyperparathyroidism is a rare disease in children and adolescents and parathyroid adenoma is the most common cause. Most of patients are clinically symptomatic and may present signs or symptoms of hypercalcemia. The aim of this report is to describe two case of hypercalcemia due to parathyroid adenoma presenting with different clinical findings.

14 years old male patient with abdominal pain, vomiting and nausea were diagnosed with acute pancreatitis. His laboratory findings were elevated amylase and lipase levels, hyperglycemia, hypercalcemia and hyperparathyroidism. Parathyroid scintigraphy showed the presence of an adenoma. Normocalcemia was provided with pamidronate and hyperglycemia was treated with insulin. Adenoma excision was performed after acute pancreatitis was recovered with replacement therapy. After the surgery, diabetes mellitus persisted and he had a hungry bone syndrome.

Other patient was a 12-year-old male patient presented with complaints of anorexia, weakness, constipation and nausea. He had hypercalcemia, hypophosphatemia and hyperparathyroidism. Parathyroid adenoma was detected with parathyroid scintigraphy. Adenoma excision was performed and postoperatively he had a hungry bone syndrome.

Hypercalcemia associated with primary hyperparathyroidism is rare but generally symptomatic in children and adolescents. It should be kept in mind in the differential diagnosis of hypercalcemia and patients should be protected from complications and permanent damage.

Keywords: Hypercalcemia, paratyroid adenoma, primary hyperparatyroidism.

ÖZ

Hiperkalsemi, uç organ hasarına yol açabilen nadir fakat ciddi bir metabolik bozukluktur. Primer hiperparatiroidizm, çocuklarda ve ergenlerde nadir görülür ve en sık nedeni paratiroid adenomudur. Hastaların çoğu klinik olarak hiperkalsemi semptomlarını gösterirler. Bu bildirinin amacı, farklı klinik bulgularla ortaya çıkan ve nadir görülen iki ayrı paratiroid adenomu olgusunu tanımlamaktır.

Corresponding author: Merve Nur Hepokur
Department of Pediatric Endocrinology, Istanbul Medeniyet University Göztepe Training and Researh Hospital, Istanbul, Turkey
E-mail: *mervenur87@gmail.com*
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Karın ağrısı, kusma ve bulantı şikayeti ile başvuran 14 yaşında erkek hastaya amilaz ve lipaz seviyelerinin yüksek olması üzerine akut pankreatit tanısı kondu. Bu duruma ek olarak hiperglisemi ve hiperkalsemisi saptanan hastanın PTH değeri oldukça yüksekti. Paratiroid sintigrafisi çekilerek paratiroid adenomu gösterildi. Hastaya pamidronat verilerek normokalsemi sağlandı ve hiperglisemi için insülin tedavisi başlandı. Replasman tedavisi ile akut pankreatit düzeldikten sonra adenom eksizyonu yapıldı. Hastanın posoperatif dönemde aç kemik sendromu gelişti ve tedavi edildi. İzlemde hastanın insülin tedavisine devam edildi.

İkinci olgu bulantı, iştahsızlık, halsizlik ve kabızlık şikayetleri ile başvuran 12 yaşında erkek hasta idi. Bakılan laboratuar parametrelerinde hiperkalsemi, hipofosfatemi ve hiperparatiroidi saptandı. Paratiroid sintigrafisi ile paratiroid adenomu tespit edildi. Adenom eksizyonu yapıldı ve postoperatif döenmde aç kemik sendromu gelişti.

Primer hiperparatiroidizm ile ilişkili hiperkalsemi nadir olmakla birlikte çocuklarda ve ergenlerde genellikle semptomatiktir. Hastaları komplikasyonlardan ve kalıcı hasarlardan korumak için hiperkalseminin ayırıcı tanısında akılda tutulmalıdır.

Anahtar Sözcükler: *Hiperkalsemi, paratiroid adenomu, primer hiperparatiroidizm.*

INTRODUCTION

Primary hyperparathyroidism (PHPT) is that characterized by excessive secretion of PTH, a rare during childhood. It has an incidence of 2–5 per 100.000; accounts for 1% of cases of hypercalcemia (1). Single parathyroid adenoma affects 80% of the cases. Most of patients are clinically symptomatic and may present signs or symptoms of hypercalcemia, skeletal complications, mass in the neck, nephrolithiasis and/ or rarely acute pancreatitis (2). Hypercalcemia is a rare but serious metabolic condition that may lead to end-organ damage. When hypercalcemia is detected, the diagnosis must be quickly confirmed and treated appropriately (3).

Acute pancreatitis is defined as the rise of pancreatic digestive enzymes in the serum and/or urine and the presence of radiographic changes in the pancreas, with clinically sudden onset abdominal pain (4). Hypercalcemia as an etiology of pancreatitis has been described in the literature, with a reported prevalence of 1.5-8%, but most cases have been reported in the adult population (5).

We report two adolescents diagnosed with hypercalcemia due to parathyroid adenoma presenting with different clinical findings.

Case 1

A 14-year-old male patient presented with abdominal pain, nausea and vomiting for two days. He was diagnosed with acute pancreatitis according to computerized tomography and elevated amylase and lipase levels and he was referred to our clinic. He was also diagnosed with a unilateral multicystic kidney in the neonatal period and had a family history of gastric cancer in his father and type 2 diabetes in his grandmother and aunt.

In his first physical examination; he was dehydrated and he had abdominal tenderness and defense especially in the upper side of the abdomen. Laboratory results reported plasma glucose 669 mg/dl, amylase 1160 U/l, lipase 2445 U/l, calcium 17.3 mg/dl, phosphorus 3.4 mg/dl, urea 79 mg/dl creatinine 2.47 mg/dl, procalcitonin 9.3 ng/ml. His blood gas was in a normal range and HbA1c was 5.4%. His chest x-ray was taken and there were signs of pleural effusion in left side.

As he was diagnosed with acute pancreatitis due to hypercalcemia and PTH level has been found 904.5 pg/ml. Neck USG revealed an 18x11 mm hypoechoic lesion which was preoccupied parathyroid adenoma. During the first two days, he was treated hemodialysis. Hypertension was controlled with calcium channel blockers and beta-blockers; high glucose level controlled with insulin treatments and pleural effusion was under control with antibiotic therapies and a thorax tube replaced. Pamidronate therapy was also given a dose of 1mg/kg/day for three days. His amylase, lipase, creatinine and calcium were declined normal levels. Parathyroid scintigraphy showed a parathyroid adenoma in the left low lobe. Adenoma excision was performed to the left low

lobe and after the successful surgery without any complication, PTH levels decreased immediately in the postoperative period. However, on the postoperative first day, hypocalcemia requiring calcium infusion was developed. He had hungry bone syndrome and was treated with IV calcium and calcitriol. Histopathological examination confirmed the diagnosis of parathyroid adenoma. The patient continues to be followed one year after the surgery; he has been treated by calcitriol and multiple daily insulin injections and also he had anti-islet cell antibody (anti ICA) positivity. He did not experience hypercalcemia episode and pancreatitis again.

Case 2

A 12-year-old male patient presented to the hospital with complaints of anorexia, weakness, constipation and nausea for one month. He had also broken his fingers and toes one year ago. Family history was also negative for known diseases. In physical examination, he was dehydrated and exhausted. Laboratory reports showed glucose 84 mg/dl, calcium 15.7 mg/dl, phosphorus 2.5 mg/dl, alkaline phosphatase 282 IU/L, magnesium 1.9 mg/dl, albumin 4.1 g/dL, creatinine 0.81 mg/dl. PTH level was 717 pg/mL. Neck USG showed that a 24x9 mm hypoechoic lesion at the posterior of the left thyroid lobe. His renal USG was normal. Parathyroid scintigraphy showed that there was a parathyroid adenoma in the middle zone of the left thyroid lobe posteriorly.

Firstly; intravenous fluid replacement therapy started with 0.9% saline. On the second day of admission; hypercalcemia persisted and pamidronate treatment was given a dose of 1 mg/kg/day for four days. After the pamidronate therapy; he had a fever for two days. After normocalcemia was provided; adenoma excision was performed by pediatric surgery department without any complication. PTH levels decreased immediately after the operation. On the postoperative second day; hypocalcemia was detected, he had hungry bone syndrome that was cured with IV calcium gluconate and calcitriol. Histopathological examination confirmed the diagnosis of parathyroid adenoma.

The patient continues to be followed two months after the surgery; calcium and calcitriol was discontinued. In follow up; hypocalcemia and hypercalcemia was not observed.

DISCUSSION

PHPT is a rare in children, but affected patients are generally symptomatic with hypercalcemia symptoms or complications (6). PHPT is usually associated with single parathyroid adenomas in childhood. When 99 m Tc-sestamibi scintigraphy and USG are used together, the positive predictive value for localization of a parathyroid adenoma can be as high as 97%. Parathyroid adenomas is detected, hypercalcemia should be corrected first. Treatment of hypercalcemia is aimed at both lowering the serum calcium concentration and correcting the underlying disease. Hydration, loop diuretics, glucocorticoids, calcitonin, bisphosphonates and dialysis can be used in treatment (3). Adenoma resection is the definite treatment in parathyroid adenoma (7).

Hypercalcemia due to PHPT is a rare cause of acute pancreatitis (8). Patients with PHPT and hypercalcemia have up to 10% times more risk of suffering from acute pancreatitis. The risk of acute pancreatitis with calcium values over 14 mg/dl is of 25%. First patient was diagnosed acute pancreatitis due to parathyroid adenoma. In the literature; although similar adult cases have been described; our knowledge there are only a few child cases. Diabetes is another problem in the course of pancreatitis. However, it is not a highly anticipated situation after acute pancreatitis. Our patient was stable with only glargine insulin for a few months after operation. However, he is now taking multiple daily injections. There was an anti-ICA positivity in our case; so an early diagnosis of type 1 diabetes cannot be excluded. Another explanation for this positivity can also be damage to the pancreas.

Hungry bone syndrome is characterized by a postoperative hypocalcemia due to remineralization of various minerals and seen in about 12.6% of operations on the parathyroid gland (9). After resection; bone resorption is rapidly decreasing and normalizing, while there is a dramatic increase in bone formation (10). Both patients had hungry bone syndrome, postoperatively. Our patients were treated with calcium and calcitriol replacements.

In conclusion, PHTP is a rare disease in children and adolescents. The etiology of hypercalcemia must be determined and treatment should be started immediately. Usually patients do not

suffer permanent damage after recovery but our first case continues to live with diabetes mellitus. PHTP is a rare but treatable disease, it should be kept in mind in differential diagnosis in children with hypercalcemia.

Conflicts of Interest

The authors have no conflicts of interest to declare.

Statement of Ethics

Informed consent and permission document was obtained from the parents of both cases mentioned in the article and the tenets of the Declaration of Helsinki were followed.

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