Acute Psychosis and Depression Associated with Hypercalcemia: A Case Report

Hiperkalsemiye Bağlı Olduğu Düşünülen Akut Psikoz ve Depresyon: Olgu Sunumu

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ABSTRACT

Psychosis and depression are mental disorders that can exist secondary to some medical disorders and may be associated with the use of drugs. The most frequent causes of these disorders are substance abuse, infections (especially central nervous system infections), hormone or collagen tissue disorders, cancer, and side effect of drugs used to treat diseases. Hypercalcemia is referred as high level of calcium in the blood - higher than 10.2 mg/dl - and is often seen with parathyroid adenoma. Hypercalcemia may cause several symptoms. In this case report, we represent the case of a patient who presented with delusion of persecution and depressive symptoms probably secondary to hypercalcemia. (Archives of Neuropsychiatry 2013;50: 75-77)

Key words: Hypercalcemia, psychosis, depression

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INTRODUCTION

Hypercalcemia is a condition in which serum total calcium level is above the normal limits of 8.4-10.2 mg/dl which is accompanied by hypophosphatemia and which is caused by parathyroid adenoma with a rate of 80% (2). The prevalence of hypercalcemia ranges between 0.1% and 0.01% and can be observed 10 times more frequently in the elderly. The diagnosis is made by increased serum calcium and parathyroid hormone levels, increased urinary excretion of calcium and observation of adenoma on ultrasonography. Psychiatric symptoms and abnormal physical symptoms are usually observed with a serum calcium level above 12 mg/dl. Apathia, fatigue, depression, anxiety, restlessness, nausea, vomiting, constipation, abdominal colic, joint pain, weight loss, proximal muscle weakness and decreased deep tendon reflexes may be observed. Serum values above 14-16 mg/dl may lead to delirium and seizures. Short QT interval may be observed on electrocardiogram, general slowing may be observed on EEG and nephrocalcinosis and pancreatitis may be observed in patients with long-term hypercalcemia (3,4). Moderately high levels are observed in hyperparathyroidism and severely high levels are generally observed in cancer. Although hypercalcemia is observed in conditions including granulomatous diseases, vitamin D intoxication, use of thiazide diuretics and lithium, hypothroidism and adrenal insufficiency, the relation between serum levels and psychiatric symptoms is controversial (5).

The patients can stay asymptomatic for a long time. Neuropsychiatric symptoms are observed in half of the patients. Apathia and depressive symptoms associated with
moderate cognitive disorder are observed most commonly. Although catatonia, confusion, psychosis, obsessive compulsive disorder, mania, anxiety, asthenia, lethargy, apathia, delirium and depression have been reported in the literature, case reports are limited. The mechanisms are not know clearly, but the dopaminergic system, endocrine system and pathology in calcium channels are thought to be involved (6,7,8).

**Case**

38 year-old male, married, has 4 children. He came to Ankara in May 2008 to work as a seasonal house painter. He worked as a house painter in two buildings until July 2008. He worked 6 days a week, stayed in an affordable hotel and met with the children of his uncle who were living in Ankara at times. In August, he recognized that the wife of one of the persons who worked as a leader in his work place was interested in him. According to the statement of the patient this woman talked with him for a couple of times and proposed to establish a relationship, but the patient refused her saying that he was married and had children. He got bored because of this situation and decided not to go to his work place and started to stroll around in the streets in a way he could not remember clearly. While he was strolling around in a confused state one day, he passed by his work place. At that moment, he saw the leader whose wife had proposed him to establish a relationship. Then he started to think that this leader would kill him. During those days, he was intensively thinking that he was under threat and the leader would harm him and his family. While the patient was again strolling around in a restless and anxious state one day, he started to think that he could not endure this threat any more and he could save himself from this fear and his family from this threat by committing suicide. With this aim he went to the train station and climbing over the barriers he threw himself onto the rails while the train was coming. The train broke off his both legs at the level below the knees. He was brought to Hacettepe Medical Faculty Emergency Department. He was urgently operated by the Department of Orthopaedics. One of his feet was stitched back to its place, while the other foot could not be stitched because of much tissue loss. The patient who was followed up in the Orthopaedics ward stated that he was under threat, they would find him in the hospital and kill him, he should kill himself before they found him, otherwise his family would also be harmed, his family should be informed and he needed help from the police. He stated similar expressions from the first day of hospitalization and after a few days he said that he had a contagious disease, it would be transmitted to anybody who contacted him. The patient was evaluated by the on-call doctor during the psychiatry consultation ordered at those days and he was found to have an open consciousness and a full orientation and decision. The patient should be reevaluated. On detailed examination performed on the next day, it was observed that the left leg was amputated one hand span below the knee and the right leg was repaired at the same level. No pathological finging was observed on neurological examination, though the examination could not be performed completely because of amputation in the lower parts of both legs. On psychiatric examination, his speech was clear, understandable and goal-orineted. Memory examination revealed a normal immediate, recent and remote memory. His orientation was normal, he was aware of the hospital, time and his relatives. His affection was increased in the direction of distress. His mood was stated to be anxious and sad. Perceptual deviation was not clearly described. He had delusions that he had a disease and he would transmit this to other people, he and his family would be harmed and the only way was killing himself. Association of ideas was regular in the process of thinking. He had thoughts of persecution that he and his family would be harmed and themes with depressive content that he would better die and could not be saved were noted. His family stated that he was generally a simple-minded, well-mannered person who had no problem. No problem was described in his relations with his family and relatives. It was stated that he had been smoking one package of cigarettes a day for 20 years and used no other substance. He had no familial history of psychiatric disease. The patient who was evaluated with daily examinations stated that his family was under threat, it was too late and his family members might have died. When the reason was asked, he said he did not want to give much information, he had a contagious disease, nobody should be in his room including the patient beside, there was nothing to do for him and his family should be saved at least. He said that he threw his cellular phone because the people he was suspicious about could reach him by phone and harm him. The initial laboratory findings were found to be normal. Serum calcium level was found to be 10.1 mg/dl which was close to the upper limit of normal (10.2 mg/dl). After the operation leukocytosis was found (13000/µL). The Orthopaedics department stated that these values could be observed postoperatively. In the follow-up, it was found that his serum calcium levels were mildly higher than normal. Despite fluid treatment administered because of his general status, the calcium levels were found to be mildly higher than normal (10.4-10.5 mg/dl). During the follow-up in the ward, hypertension and high blood glucose level were found in the patient. It was planned to administer 5 mg/day amloidipine for hypertension and monitor blood glucose levels. After he was evaluated by the department of psychiatry, it was planned to administer 2 mg/day risperdone for the first two days and to increase the dose to 4 mg/day and to monitor the depressive symptoms. In the second week of follow-up, serum calcium levels were found to range between 10.9 and 12.7 mg/dL. As a result of these findings, further investigations were performed with the recommendations of the Department of Internal Medicine and adenoma was found in the parathyroid gland on USG. Urinary calcium excretion was not tested. Parathyroid hormone level was found to be 1.8 nanogram/ml which was higher than normal (0.4-1.4 ng/ml). At that time, the patient got a score of 26 on Hamilton Depression Rating Scale. Massive fluid and diuretic treatment was administered to the patient who had Ca values above 12 mg/dl in this stage. It was decided that the patient should be monitored by the department of Internal Medicine. Blood calcium level did not decrease in the follow-up and the patient was operated with the recommendation of the department of General Surgery. The parathyroid adenoma was removed. Postoperative calcium levels were found to be within
normal limits. In the interview performed two days after the operation, it was observed his thoughts that he had a disease and this would be transmitted to other people were markedly decreased. The patient stated that he had such thoughts in the first days when he was hospitalized, but he no longer had these thoughts. The patient whose thoughts that he and his family were under threat partially decreased and he talked about this subject less frequently. During the interviews, he stated that he could not sleep, he was left with one foot, life would be hard for him, it would be better if he died. These complaints were interpreted as depressive symptoms and 10 mg/day escitalopram was added to 4 mg/day risperdone treatment on the third postoperative day. His general and psychological status was found to be well at the following follow-up visits. On the 20th postoperative day, he stated that the husband of that woman could not find him any more, he trew his cellular phone and nobody knew that he was hospitalized except for his relatives. He said he felt better, he would live in a way even with one foot, he would encourage his children to study. He had no suicidal thoughts. He got a score of 7 on the Hamilton Depression Rating Scale re-applied on that day. A few days later, he was discharged on the 32nd day of his hospitalization with his own will and with the family’s will, since his general status was improved. The patient was told that this condition he experienced could have developed secondary to the parathyroid adenoma, he should take his drugs regularly and come back for follow-up visits. Information was obtained from his relatives that he had not been using his drugs and had no complaints. At the end of the third month, it was learned that he had not been using his drugs approximately for 2 months and his condition of wellbeing persisted.

Discussion

The diagnosis of psychotic depression and postpsychotic depression were excluded, since the psychotic symptoms started before the depressive symptoms, the patient developed depressive symptoms after hospitalization and psychotic symptoms were associated with depressive symptoms for a while. After an organic cause was found, acute psychosis and depression due to hypercalcemia was diagnosed. Marked improvement was observed in the complaints of the patient who used 4 mg/day risperdone for approximately four weeks and 10 mg/day escitalopram for three weeks during hospitalization. Risperdone was started as antipsychotic treatment to alleviate psychotic and depressive symptoms. Following removal of the parathyroid adenoma, antidepressant treatment was started on the third day. We could wait to see if his symptoms were alleviated after the operation without starting drugs, but we thought both drug therapies should be continued, since the diagnosis of adenoma was made after antipsychotic treatment was started and the patients had severe depressive symptoms with suicidal thoughts. Although it is stated in the literature that the symptoms in these patients could alleviate when the actual cause is removed, there is no clear time period. The possibility of schizophrenia in the future was considered to be low because of the fact that there was no familial history of psychological disease, the patient’s age, determination of a medical cause, alleviation of the psychotic and depressive symptoms in a short time and the fact that the patient did not develop any complaint, although he discontinued treatment. Since the patient did not come back for follow-up visits, it is difficult to make interpretation about this condition, but he was recommended to refer to a psychiatrist in the region he resided. We tried to reach the patient at the stage when this article was being written, but could not succeed, since the phone number given was not being used and his relatives changed their address.

In the literature, it has been stated that symptoms are resistant to the above mentioned drug treatments in a part of the patients who are found to have hypercalcemia-related psychological disorders (10,11). In treatment of psychopathological symptoms, it is recommended that the actual underlying cause should be treated together with treatment of these symptoms. In some studies, it was found that the symptoms markedly decreased, when they were screened using SCL-90. In one study, the levels of 5-HIAA (5 hydroxyindol acetic acid) which is a serotonin metabolite, HVA (homovalenic acid) which is a dopamin metabolite and MPHG (3 metoxy 4 hydroxyphenylglycol) which is a noradrenaline metabolite in the cerebrospinal fluid were found to be decreased in patients who displayed hypercalcemia-related psychiatric symptoms and these levels were found to be normal one month after operation (9). In many patients, complete recovery is only possible with treatment of the underlying cause which leads to hypercalcemia (10). Although there is no clear information about how long the psychiatric treatment should be continued in the literature, it has been reported that psychotropic drug treatment was discontinued after hypercalcemia treatment was performed in case samples and the patients displayed no disease symptom (11).

References