BREAST CANCER DIABETES INSIPIDUS CASE WITH NORMAL HYPOTHALAMO-HYPOPHYSIAL AXIS

Korkmaz T¹, Ekici K², Seber S³, Banzragch M⁴, Kazan S⁵, Dizen E⁵, Mayadagli A²

1. Dr. Lutfi Kirdar Kartal Education and Research Hospital, Department of Medical Oncology, Istanbul, Turkey
2. Dr. Lutfi Kirdar Kartal Education and Research Hospital, Department of Radiation Oncology, Istanbul, Turkey
3. Marmara University Hospital, Department of Medical Oncology, Istanbul, Turkey
4. Marmara University Hospital, Department of Gastroenterology, Istanbul, Turkey
5. Dr. Lutfi Kirdar Kartal Education and Research Hospital, Department of Internal Medicine, Istanbul, Turkey

Correspondence: Dr. Kemal Ekici. Dr. Lutfi Kirdar Kartal Education and Research Hospital, Department of Radiation Oncology, Istanbul, Turkey
Email: drkemal06@hotmail.com


ABSTRACT

Central diabetes insipitus (CDI) is a disease which characteristic with polyuria and polydipsia. Hypothalamo-Hypophysial system insufficiency can occur with neoplastic infiltration, surgery, cranial trauma or idiopathic. In cancer patient it occurs with metastasis mostly and common in lung and breast cancer. Without metastasis sometimes can occur related with hormonal mechanism. We wanted to discuss a breast cancer diabetes insipitus case with normal hypothalamo-hypophysial axis with literature research.

Key words: Diabetes insipitus, pituitary, metastasis

INTRODUCTION

Central Diabetes Insipidus (CDI) is a rare hypothalamic-pituitary disease due to the deficiency of arginine vasopressin (AVP) synthesis from the hypothalamus and/or secretion from the neurohypophysis. It is mainly characterized by a polyuria-polydipsia syndrome. Etiology of diabetes insipitus mostly related to the hypophysial surgery, cranial trauma, neurohypophysial granulomatosis or cancer rarely. In one of three patients cannot find the etiology and counts as idiopathic¹-⁴. Hypophysial metastasis is rare in all kind of malignancy. Hypophysial metastasis first time was shown in autopsy of malign melanoma patient in 1857. After hypophysial surgery metastasis find only in %1 of cancer patients. In autopsy reports shows %5 metastasis. Therefor it is difficult to show metastasis for clinicians⁵.
CASE REPORT

57 year old female patient with breast cancer passed throw left side modified radical mastectomy in 2006. Administered adjuvant chemo and radiotherapy due to the patients estrogen/progesterone was negative and her2 was (+3) positive. In the follow, liver metastasis was found in December 2008 and was administered six cure chemotherapy of Xeloda, Docetaxel and Herceptin. Partial response was obtained and continued chemotherapy with Trastuzumab. Under this treatment in April 2012 was found 6 cm mass in right ovarian region in MRI. Cannot identified primary or seconder metastasis for this mass. Patient passed throw total abdominal hysterectomy-bilateral salpingooferectomy in July 2012. Pathological report was shown metastasis. Around postoperative 20.days patient applied to the emergency room with newly onset weakness, polyuria, polydipsia and altering mental status. Laboratory analysis was shown serum sodium level 169 mEq/l and blood plasma osmolality was calculated 351 mOsm/kg. Diabetes insipitus was suspected because of polyuria and 24 hour urine density and osmolality was requested. Urine osmolality and urine density was found respectively 238 mOsm/kg and 1005. Under fluid restriction urine density and osmolality was not raised and serum sodium rose to 175 mEq/l, that is way fluid restriction test terminated. Patient undergone hypophysial and cranial MRI at the same time checking for cranial metastasis. Hypothalamo-hypophysial system was evaluated normal (Figure 1) but 29x23 mm metastasis was found in Cerebellar vermis (Figure 2). Patients serum TSH, FT4 and LH levels were respectively 8.4(0.35-4.9 uIU/mlt); 7.7 (9-19 pmol/l) and 0.02. The clinic, serum and urine analysis was compatible to the diabetes insipitus in this case. After Desmopressin (DDAVP) 10 μg nasal sprays 2x1, serum sodium level declined to the normal arrange in the 48 hour. Normalization of serum osmolality and polyuria after Desmopressin was exclude nephrogenic diabetes insipitus. Radiotherapy was administrated because of cranial metastasis. Because of Desmopressin needs did not diminished after RT, progression under Trastuzumab, Lapatinib and Capesitabin chemotherapy was administered, of which blood-brain penetration is better. After few weeks Desmopressin needs diminished. The patient still followed under the last regime of chemotherapy.
DISCUSSION

Central DI in cancer patient mostly related to the destruction of metastasis of Hypothalamo-hypophysial tissue. Many post-mortem histological studies support this (1,
2). Most common cancer which makes metastasis to the hypophysis are breast and lung respectively 40 % and 33 % 4.

K. Wassermann and colleague was reported a case with clinical signs of DI but normal Hypothalamo-hypophysial system as ours. In their case ADH level was not raised during follow and related to the inhibiting hormonal mechanism of ADH synthesis or secretion. Some tumor related hormonal mechanism can make inhibition on secretion of ADH from hypophysis and precipitates central DI.

Curley and colleague reported a case with DI in 3q21q26 related AML. In this case cranial MRI and brain fluid analysis was normal. Ecotropic virus integration site-1 (EVI-1) gens expressed high in 3q21q26 syndrome or monosomi of 7 chromosome related AML in which DI improved with. Breccia M and colleague offered hypothesis of ADH transcription decreases with EVI-1 expression and makes DI clinically 6-7.

In Para neoplastic syndromes reason is related to the hormone or cytokine over synthesis as ectopically ACTH, inappropriate ADH or hypercalcemia. But also ADH synthesis or secretion from hypothalamo-hypophysial system can inhibit by tumor related hormonal mechanism. One of three Diabetes insipidus is idiopathic and one of three of them is related to the antibody against to the AVP secreting cells of hypothalamus. Even though we did not run antibody tests, but some surgery related central DI cases also reported positive antibody (AVPCAB). Pivonello and colleague argued that temporary antibodies which are against to the AVP secreting cells of hypothalamus can be responsible for surgery related DI. In our case there was not any autoimmune disease and other endogen antibody, therefor it can support this hypothesis 8-9.

In the end, breast cancer in HER2 neu positive patients brain metastasis is not rare, and run cranial MRI can be appropriate onset of polyuria and polydipsia without of neurological symptoms.

COMPETING INTERESTS

The authors declare that they have no competing interests.

REFERENCES