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FOLLOWING UP SMALL CELL LUNG CANCER WITH SERUM SODIUM LEVEL

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Introduction - Purpose : Lung cancer is one of the most frequent seen and mortal cancer type world wide; therofore it causes death more than breast, colon, and prostate cancer for instance. Small cell lung cancer (SCLC) is seen in almost 20% of lung cancer (1). Mostly SCLC patients (approximately 70%) had metastasis at diagnosis time unfortunately (2). Hyponatremia; defined as serum sodium level being below <136 mmol/L, and is a frequent electrolyte abnormality in SCLC patients (1). Hyponatremia coexistance in SCLC patients is approximately 15% (2). On the other hand; hyponatremia up to 44-45 % had been reported in most cases due to a paraneoplastic syndrome like inappropriate antidiuretic hormone (SIADH) (ADH, also known as arginine vasopressin) secretion. Hyponatremia symptoms include nausea, fatigue, disorientation, muscle cramps. Severe hyponatremia may lead to seizures, even death (1). Some studies reported that low sodium level could worsen prognosis (2, 3) but there is not enough evidence about tumor progression follow up efficacy with serum sodium levels.

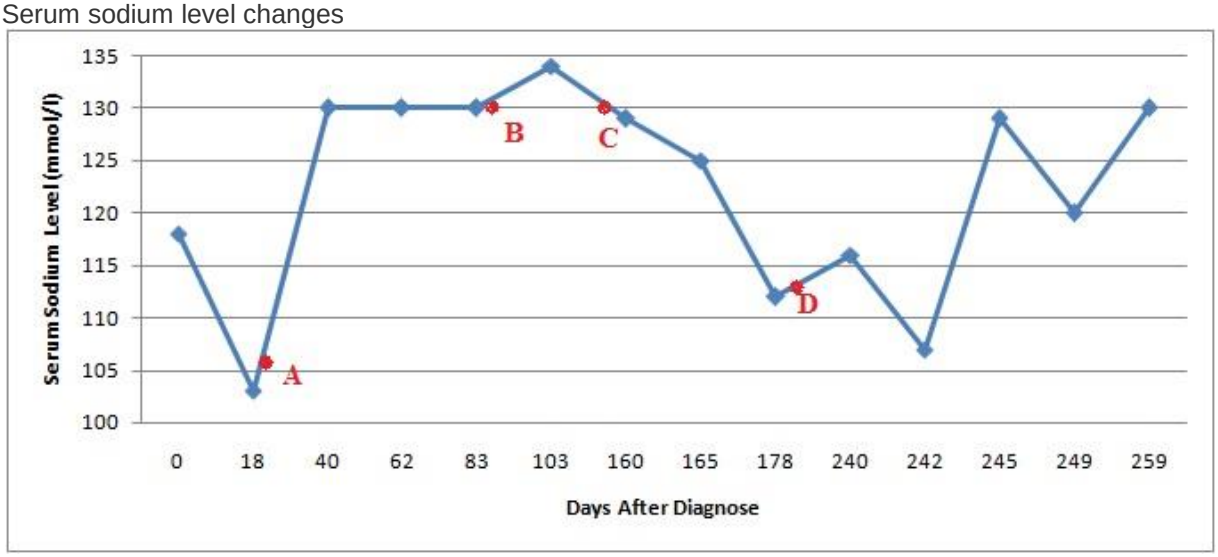
Findings : Our case is a SCLC patient having severe hyponatremia correlated with tumor progression. A 61 year old female patient having a smoking history of more than 40 years was brought to our hospital with complaints of nausea, vomiting, cough and confusion. These complains had started 2 weeks ago. In physical examination respiratory sounds were decreased and mental status was changed. Hyponatremia was diagnosed at her admission, with a sodium level of 118 mmol/L. Blood urea nitrogen (BUN), creatinin, thyroid and adrenal function tests were normal. We started hyponatremia with hypertonic salin infusion and tolvaptan (selective, competitive vasopressin receptor 2 antagonist) that resulted improvement of mental status. We suspected SIADH associated to lung pathologies because of her smoking history,her complaints and her physical examination findings. CT (computerized tomography) scan was performed and revealed a large lung mass suspicious for malignancy making pressure to pulmonary artery and there were a lot of mediastinal lymphadenopathies. Otherwise there were not any finding on her brain imaginations. PET (positron emission tomography) scan showed hypermetabolic mass lesion and a lymphadenopathies in the right lung. PET CT revealed that there was a lung mass with diameters of 25x45 mm (SUV max:14) in right upper lobe and also a sencron nodule was accompanying that mass lesion (suv max:7, size:2.3 cm) with several mediastinal lymphadenopathies.The patient underwent biopsy from the right upper lobe lung mass. lung mass biopsy was reported as small-cell lung cancer. Disease was determined as stage 4 because of distant metastasis like abdominal muscle and bones. Patient’s initial treatment had consisted of 6 cycles of chemotherapy with cisplatin and etoposide. She had tolvaptan before first cycle of chemotherapy and sodium level became normal. After first cycle patient was discharged with normal serum sodium level and advised outpatient clinic control. In follow up control visits her serum sodium level was controlled intermittently. In outpatient clinic administrations serum sodium levels were normal. After 3 cycle of cisplatin etoposide treatment she had undergone PET scan. That PET scan revealed all masses, metastasis and lymphadenopathies' sizes had decreased and their metabolic activities decreased. At the end of the 6 chemotherapy PET CT and brain magnetic resonans imaging (MRI) reports were compatible with remission. While we were planing that examinations her serum sodium level was 134 mmol/l. After definition of complete response to treatment patient was called out patient clinic controls every month. 2 months after last chemotherapy she admitted to our hospital with complains as first administration like nausea and vomiting. Initially she was evaluated with blood tests and abdominal ultrasonography. Serum sodium level was 116 mmol/l. She had been took to oncology service and firstly she was given tolvaptan and hypertonic salin infusion. Abdominal ultrasonography showed suspicious liver and pancreas mass. Than tumor progression was seen with thorax and

abdominal MRI. There were new metastatic masses on that examinations.

Discussion : Hyponatremia is a common and important electrolyte abnormality in oncology patients. Ectopic ADH production is the most seen cause of hyponatremia at SCLC patients. Also effective chemotherapy may result in hyponatremia via lysis of the tumor cells that release ADH. Several medications, such as diuretics, angiotensin converting- enzyme (ACE) inhibitors, and selective serotonin reuptake inhibitors can increase secretion of ADH at euvolemic patients. Especially in elderly patients, chronic heart failure, nephritic syndrome and volume depletion are other possible causes of hyponatremia other than SCLC (1). Our patient was euvolemic, did not have comorbidities, she had no drugus age causing hyponatremia in her past medical hystory. Indifferential diagnosis in concordance with clinical manifestations, the most propable reason of hyponatremia in our patient was ectopic secretion of ADH from lung tumor. Published studies in cancer patients showed it may be a negative prognostic factor (3). From large scale retrospective studies, shows that hyponatremia is an independent factor of poor prognosis in patients with SCLC (1). But association between serum sodium levels and tumor regression or progression is not well known yet. In our case serum sodium level was at normal range when remission after chemotherapy. But when tumor had shown progression (4 months after remission) serum sodium levels had decreased and hyponatremia symptoms had emerged again. So we think that intermittent control of serum sodium level may help us in determining progression of SCLC when remission follow up. And tendency to decreasing in serum sodium level may lead us to think early diagnosis of progression of SCLC.

Keywords: Hyponatremia; Small Cell Lung Cancer; Syndrome of Inappropriate Antidiuretic Hormone;

Serum sodium level changes



A: First chemotherapy (Cisplatine + Etoposide) B: Third chemotherapy (Cisplatine + Etoposide) C: Sixth chemotherapy (Complete response) D: Progression