Typical Pulmonary Carcinoid Tumor Case Presented With Ectopic Cushing Syndrome

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Abstract- Bronchopulmonary carcinoid tumors are observed rarely. Patients' usual symptoms are coughing, hemoptysis and recurrent pneumonia, nevertheless in rare cases tese tumors may be diagnosed with clinic conditions related paraneoplastically secreted hormone effects. In this case report, we aimed to indicate a typical lung carcinoid tumor causing ectopic cushing syndrome,presented withdiabetes mellitus, hypertension and hypokalemia.

Index Terms- Carcinoid tumors, cushing syndrome,hypokalemia

I. Case Report

59-year-old female who had complaints of mouth dryness,polydipsia, fatigue, facial rashes and common body pain over the last month. She had been diagnosed with hypertension8 years ago and had her menopause 10 years ago. On the physical examination, arterial blood pressure was found as: 140/90 mmHg, pulse: 88 / min,and malar rash-like cutaneous eruptions on theface, central obesity, eyelid edema, bilaterally pretibial pitting edema was observed at inspection. The lung sounds werebilaterally coarse in auscultation, there were rales in the apical region of the right lung. In the laboratory (Table1),it was found that high fasting blood glucose level, hypokalemia, leukocytosis, high ACTH, and cortisol levels then diabetes mesllitus treatment was ordered and potassium was replaced due to hypokalemia.Cortisol suppression was not observed in the dynamic tests for Cushing's syndrome (1 mg dexamethasone, 2 days, 2 mg dexamethasone, 8 mg dexamethasone).patient was considered as ectopic cushing syndrome according to clinical and laboratory trials.a lolulated and irregular contrured lesion in22*14 mm dimensions was observed in paracardiac fatty tissue that localized adjacent to medial segment of right lung middle lobe in postero-anterior graphy and thorax computer tomography. PET/CT was performed to Show that primary tumor and metastasis. Increased FDG (fluoro-deoxy-glucose) uptake in the nodule (1 cm) (SUV max: 3,2) located in the apex of the right lungand in the nodule (1.5 cm) (SUV max: 2,6) located in the anterion face of upper lobe right lung in PET/CTwere evaluated as malignant lesion. FDG Uptake in the nodule (2x1,5 cm) (SUV max: 1,5) located in medial face of rigth lung middle lobe was evaluated as benign lesion. Increased FDG uptake in both of adrenal gland was assessed as adrenal hyperplasia.A neuroendocrin tumor was detected in tru-cut biopsy performed on a nodul found inthe medial part of the right lung middle lobe, thereforethree nodular lesions located in posterolateral and apical parts of right lung upper lobeand medial part of middle lobe were excised with wedge resection.Histopathologically(Fig. 3), atelectasis findings, anthracosis, chronic inflamation, pneumonia found in nodular area located in posterolateral part of right lung upper lobe, pneumonia in the apical segment of the right lung upper lobe, nodular area in the medial part of the right lung middle lobe, were determined as grade 1, well differentiated neuro-endocrin carcinoma. Oral anti-hypertensives and anti-dibetics of the patient, were stopped, because post-operative blood glucose levels were normilized and hypertension was not seen on measurements. In the follow–up, ACTH and cortisol levels were observed as normal and patient was discharged after 1 mg dexamethasone suppresion test was also found as normal. Oncology policlinic control was recommended.

II. CONCLUSION

Cushing Syndrome is a condition that can cause serious morbidity and mortality when it's not treated properly because of cortisol release. Generally,there are two groups of cushing syndrome ; ACTH dependent and ACTH independent. ACTH-dependent is 80% of CS which caused by corticotropic pituitary adenomas, but more rarely due to ectopic ACTH release.1 Lung Cancer has a high incidence and mortality rate all over the world cancer type (2). Neuroendocrine tumors (NET) are evolved from gastroenteric, hepatopancreatico bilier, urogenital, bronchopulmonary system epithelium which include enterochromaffin or Kulchitsky cells. These cells are commonly found in the gastrointestinal tract (GIS) (except the esophagus), urogenitaltract and bronchial epithelium. Bronchialkarcinoid tumors are considered to originate from neuroendocrine cells which are belonging to the APUD (amine precursoruptakeand decarboxylation) system in the bronchial mucosa.(3) The incidence of neuroendocrine tumors is 0,2/100.000 and NETs constitute is 0.5% of all cancers (4). Carcinoid tumors are the most common neuroendocrine tumors however they are less common than other lung tumors (5). The bronchial carcinoids were first described by müller in 1882. It was first used by Obemdorfer in 1907 as "carcinoid" (6) Most commonly seen in the age of 50-60. The male / female ratio is 0.9 / 1 (7). Bronchopulmonary neuroendocrine tumors are basically evaluated in four subtypes according to the 2004 World Health Organization (WHO) histological classification. These 4 subtypes are: low-grade typical carcinoid tumors (TK), intermediate-gradeatical carcinoid tumors (AK), and 2 high graded mild large-cell neuroendocrine carcinomas (BHNEK) and small cell lung cancer (SCLC).

TK and AK together are evaluated as bronchopulmonercarcinoid (BP-carcinoid) tumors (8). More than

half of typic bronchopulmonarycarcinoid tumors are peripheral and constitude %10 of bronchopulmonary carsinoids. On the other hand, 80% of typical carcinoid tumors are located on central and 20% are peripheral (3, 9, 10). In our case, typical carcinoid tumor had peripheralsettlement . 58% of BP-carcinoids are symptomatic at baseline, often patients present with coughing at 32%, hemoptysis at 26%, 24% atypical pneumonia (classic tiriad) due to luminal obstruction and tumor ulceration. Symptoms vary on hormonally active tumors depending on the effect of the bioactive hormone whichsecreted years ago without findings of luminal obstruction. Peripheral tumors may remain asymptomatic for a long time in consequence of their small size and very slow growth (10-12).In our case, there were no classical symptoms which are seen in common because of peripheral settlement. Non spesific symptoms such as lassitude was in the foreground.Bronchopulmonary carsinoid tumor is found in patients who presened with ectopic cushing syndrome at range of over %40.(13).In our caseectopiccushing syndrome is confirmed by dynamic tests which performed because of the high serum cortisol at 8:00 am baseline and baseline ACTH. Radiologically, more than %40 of pulmonary neuroendocrine tumors may detected on x-ray graphies. Bt scans with contrast is gold standart on radiologic imaging (15). 75% of BP-carcinoid tumors can be detected by bronchoscopy and diagnosed by biopsy (3, 10). In our case, lesion was periferic lesion and diagnosed with true-cutbiopsy in the presence of imaging. In p-carcinoid tumors, the main treatment is the complete resection of tumor with protecting paranchymal tissue. Wedge resection or segmentectomy is performed in small tumors with peripheral settlement, mass extirpation or bronchial resection are performedin central tumors (10,16,17). In our case, mass was removed with wedge resection because tumor was small and peripheral settling.Sandostatin is the first suggested option who has carsinoid syndrome and acromegaly as medical treatment after surgery. Taking serum cortisole levels under control is recommended after surgery and if it's resistent to treatment bilateral surrenectomy is an option (18). Radiofrequency ablation after primary surgery is often recommended in pulmonary carcinoids with slow progres- sion. Cytotoxic therapies are only standard in aggressive metastatic pulmonary carcinoid tumors, although their effect is limited (18). Our case was presentedwith symptoms of ectopic cushing syndrome. Serum cortisol levels were found under control in dynamic tests after primary surgery. It was seen that diabetes mellitus and hypertension, which is caused by ectopiccushing syndrome clinically, is found that completely resolved after surgery. In conclusion, although bronchopulmonary carcinoid tumors are rare, they can be present with the clinical appearance of paraneoplastic secretory hormones, and especially in typical carcinoid tumors can be completely cured after surgery.

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Table 1:The pre-operative and post-operative laboratory values of patient

Laboratory Value	Pre-Operative	Post-Operative
Leukocyte(4000-10000 uL)	20000	10980
Hemoglobin(11-15 gr/dl)	13.2	12.5
Trombosit(150000-450000 uL)	257000	207000
Glucose (70-105 MG/DL)	154	97
HbA1c (%3.6-5,8)	6.5	
Sodium (136-145 mmol/L)	147	136
Potassium(3,5-5,1 mmol/L)	2.9	4.5
Creatinine(0.57-1.11mg/dl)	0.61	0.6
AST(0-34 U/L)	11	19
ALT(0-55 U/L)	31	22
Sedimantation(0-20 =MM/SAAT)	11	
ACTH (0-46 pg/ml)	1250	12.8
08.00Cortisol (4,3-22,4) ug/ml)	75	20.96
Mid-night23.00Cortisol	75	
1 mg dexamethasone Supretion Test (<1,8 ug/ml)	75	0.97
2 days 2 mg dexamethasone supretion test (<1,8 ug/ml)	75	
8 mg dexamethasone test	75	

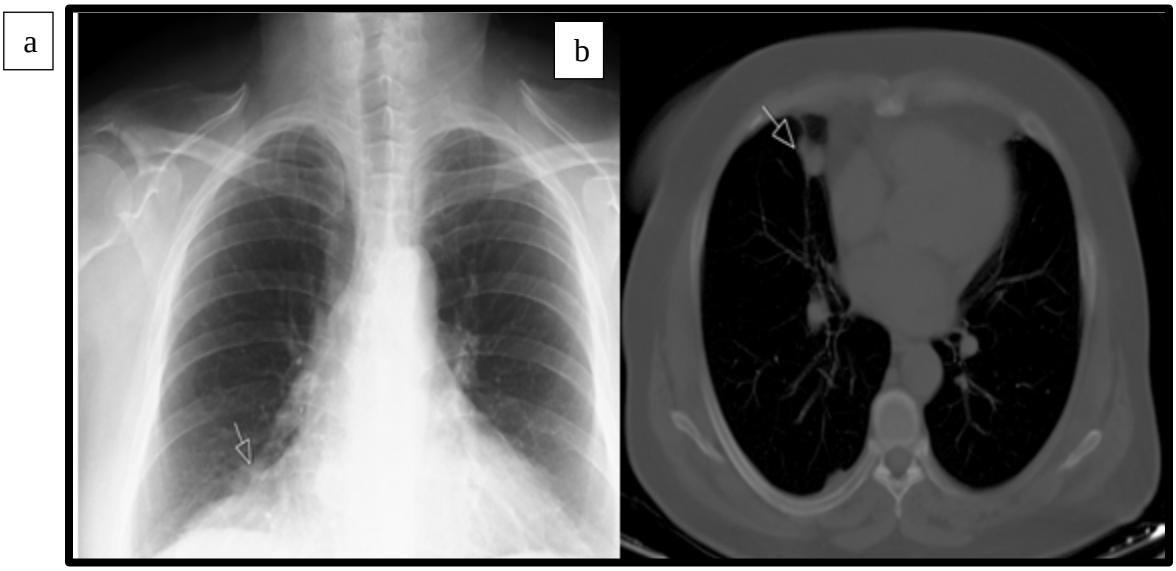

Figure 1: a) PA Lung Graphy BT, b) Thorax CT with Contrast

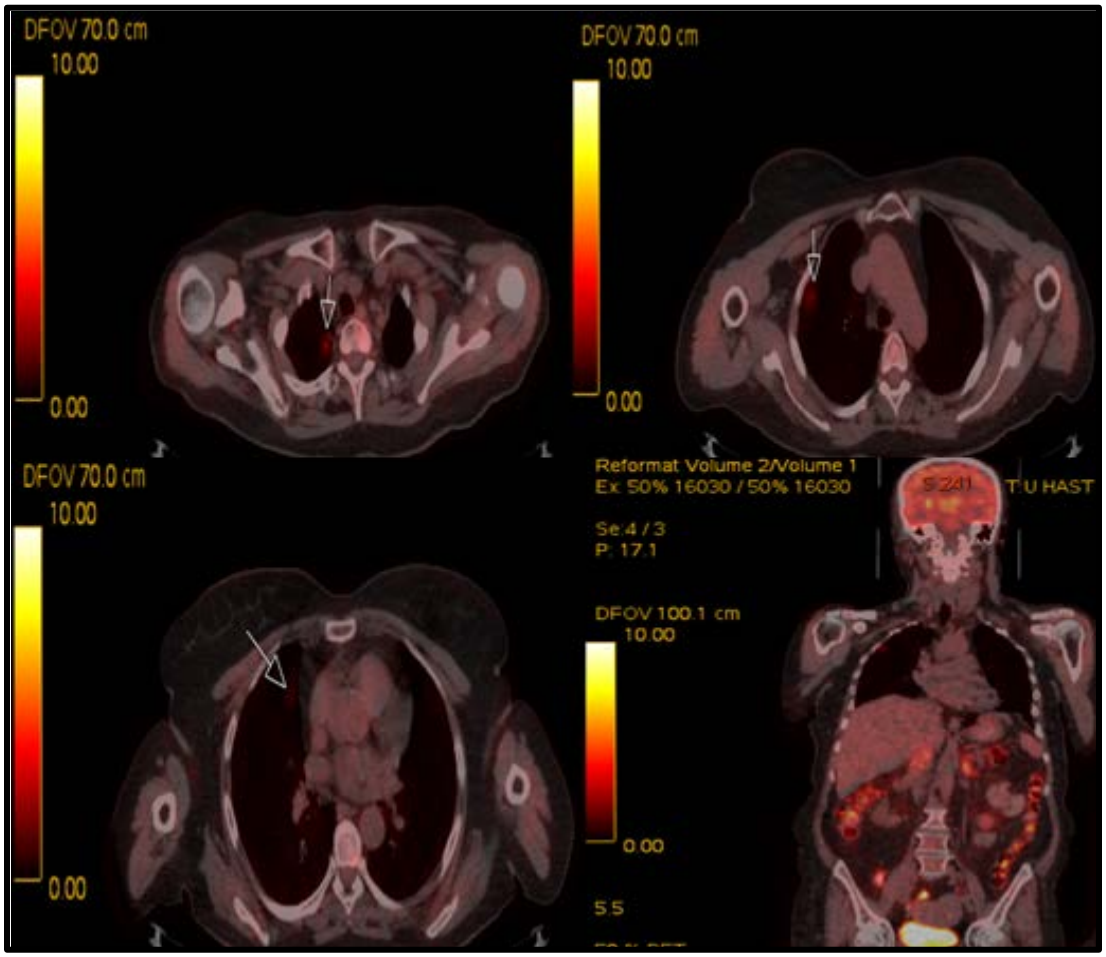

Figure 2: F-18 FDG PET/CT