

A Rare Case of Parathyroid Carcinoma, Presented with Functional Lung Metastases

Fonksiyonel Akciğer Metastazları ile Prezente olan Nadir bir Paratiroid Karsinomu Olgusu

Hasret Cengiz^{1*}, Süleyman Baş², Yasemin Tütüncü³

1.Sakarya University Education and Research Hospital ,Endocrinology and Metabolism Clinic, Sakarya, Turkey

2.SBU Haydarpaşa Numune Education and Research Hospital İnternal Medicine Clinic, Istanbul, Turkey

3.Acıbadem Kozyatağı Hospital Endocrinology and Methabolism Clinic, Istanbul, Turkey

ABSTRACT

Parathyroid carcinoma is one of the rarest endocrinologic tumors. It covers on average %1 of all hyperparathyroid cases. It can be seen as a part of genetic syndromes or generally as sporadic cases. Man/Woman ratio is 0,8/1 . Parathyroid Carcinoma is usually hormonally active and presents with advanced hypercalcemia and related clinic, and most cases have also a palpable or even detectable big neck mass. Our case is an exciting and rare case due to first presentation is hypercalcemia and hyperparathyroidia with lung methastazes without detectable parathyroid mass in neck.

Keywords: Parathyroid Carcinoma, Lung methastazes, Case report

ÖZ

Paratiroid karsinomu en nadir görülen endokrin tümörlerden biridir. Hiperparatiroidi vakalarının ortalama %1 ini oluşturur. Sporadik olarak görülebildiği gibi, genetik bir sendromun komponenti olarak da görülebilir. E/K oranı 0,8/1 dir. Paratiroid karsinomları genellikle hormonal olarak aktiftir ve ileri hiperkalsemi ve bununla ilişkili klinik ile prezente olurlar. Ayrıca vakaların çoğunda boyunda palpabl ya da görüntülenebilir bir kitle vardır. Bizim vakamız preoperatif görüntülemelerde primer tümör ile ilgili hiçbir iz bulunamamış; akciğer metastazları ile prezente olmuş nadir ve heyecan verici bir vakadır

Anahtar Kelimeler: paratiroid karsinomu ,metastaz, akciğer metastazı

Received Date: 09.03.2018 / Accepted Date: 12.04.2018 / Published Date : 13.11.2018

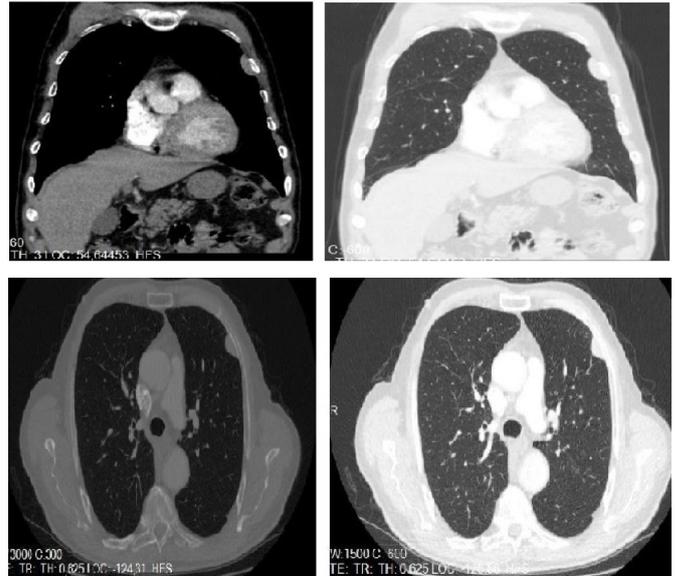
*Corresponding Author: Hasret Cengiz Sakarya University Education and Research Hospital ,Endocrinology and Metabolism Clinic, Sakarya, Turkey Adress: Köprübaşı Town. 4081 St. Santaş Corner Apartment. Serdivan Sakarya / Turkey. Phone:0530 783 00 74, E mail:drhasretc@gmail.com

Parathyroid Carcinoma is one of the rarest endocrinological tumors. It constitutes an average of %1 cases of hyperparathyroidism. The ratio of female to male is generally 0.8 / 1. It's usually seen over the 4th decade. Hypercalcemia related clinic (hypercalcemic crisis, peptic ulcer, urolithiasis, etc...) is generally present. Our case is a male patient presented with primary pulmonary metastases. Because of it's a very rare presentation we needed to write this case.

CASE

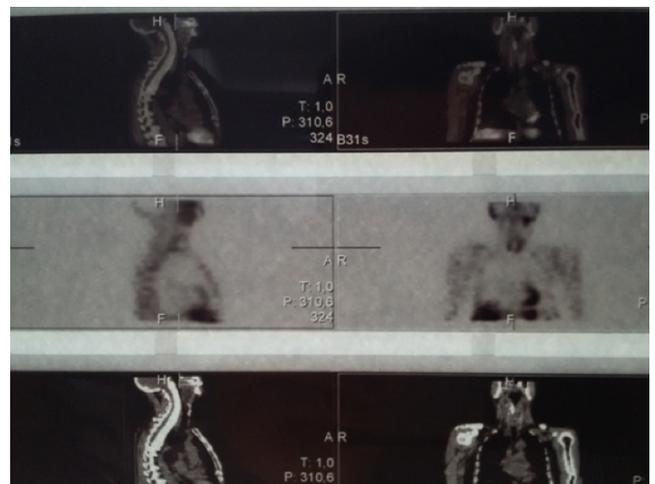
LK; A 67-year-old male patient. He had admitted to hospital for knee pain complaint, Orthopedic Clinic had decided to him operation. Hyperparathyroidism had detected incidentally in his preoperative laboratory evaluation on the basis of Calcium [Ca]: 14mg / dl [8,5-10,3 mg/dl] and Parathormone [PTH]: 1056 pg / dl [19-68pg/dl]. The first Neck US and Parathyroid MIBI (methoxyisobutyl isonitrile) Scintigraphy had detected no evidence of parathyroid adenoma or hyperplasia in the neck. Then the patient had treated with Zoledronic Acid. After medical treatment, the patient had referred again to surgery but not able to be had operated because of resistant hypercalcemia and had examined in another hospital. Second neck ultrasound [US], Parathyroid Sestamibi [MIBI] and Single Photon Emission Computed Tomography [SPECT] had performed there to the patient and found no focus on parathyroid adenoma. On SPECT-CT; MIBI involvement was not detected in the usual region of parathyroid gland in neck; but there was MIBI involving nodules of upper lobe anterior segment, middle lobe medial segment, lower lobe of posterobasal segment of the right lung, and superior segment of the lower lobe of the left lung with largest size 11x9mm [fig 2]. Thorax CT showed non-classical solid nodules with largest size 12 mm in the both of lungs. Positron Emission Tomography [PET]-CT showed nodules with minimal fluorodeoxyglucose uptake in both lungs too. [fig. 1].

The pathological result was consistent with parathyroid tissue from the surgical biopsy of dominant nodule in the right lung. Then the patient admitted to our clinic for the completion of the evaluation and treatment. After first admission patients calcium values were observed around 14 mg / dl. For treatment; extensive hydration, furosemide, salmon calcitonin and two times of Zoledronic acid were given. Parathyroid adenoma can not be localized in our repeated neck



US and parathyroid scintigraphy. Pathological revisi
Figure 1: Thorax CT images of pulmonary nodules

on of the lung wedge resection material was consistent with parathyroid tissue. The patient referred to surgery for four gland exploration with parathyroid carcinoma preliminary diagnosis. The 2x3x1cm parathyroid mass tissue in the low posterior of the left thyroid lobe localized during surgery was removed with left lobectomy of thyroid. The pathological diagnosis of this mass was found to be compatible with parathyroid carcinoma [Path Prot No: 26474-2-14] [fig:3] at Haydarpaşa Numune Education and Research Hospital Pathology Clinic. Even after removal of the primary lesion, patients PTH values [>3000 pg/dl] and Ca values [>14 mg/dl] was remained very high due to multiple metastatic masses in both lungs as expected. High-dose Cinacalcet and dacarbazine-containing adjuvant chemotherapy and surgical removal of the major functional lung metastases was planned for additional therapy for patient.



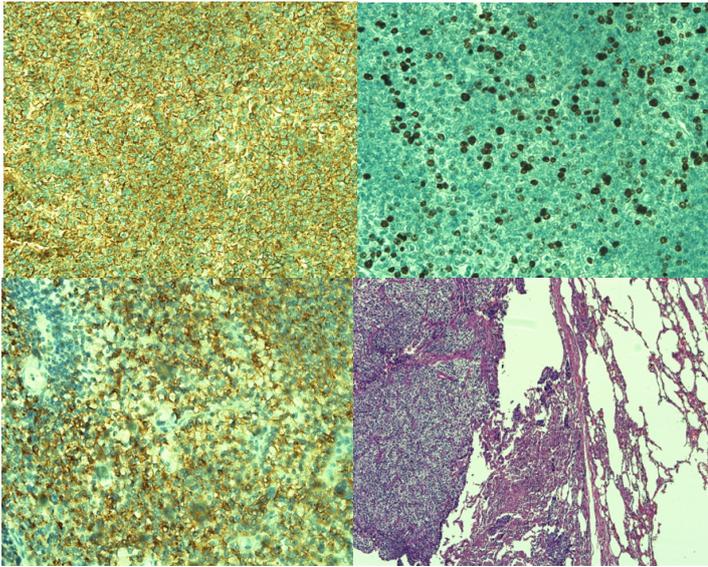


Figure 2: SPECT CT images of thoracal region.

Figure 3: Intensive immunohistochemical staining of lung metastasis of parathyroid carcinoma, HE staining, PTH, Ki67 and synaptophysin staining respectively.

DISCUSSION

Parathyroid carcinoma is a very rare endocrinologic tumor. It accounts for less than 1% of hyperparathyroid cases. There have been just above seven hundred parathyroid carcinoma cases in the literature up to date and our case is the second case presenting with pulmonary metastases. More than 90% of parathyroid carcinomas are functional and usually presents with a large mass in the neck, with severe signs and symptoms of hypercalcemia. Evidence for local invasion or metastasis is necessary to distinguish parathyroid carcinoma from adenoma before surgery [2]. Parathyroid biopsy is dangerous and unnecessary due to the risk of seeding tumor to surround tissues and not distinguishing adenomas from carcinomas. Pathologically, capsule invasion, vascular and perineural invasion, peripheral tissue invasion are other indicators of malignancy [2]. The other histopathological features of malignancy are ; tumor cell necrosis, tumor cell monotony, increased nucleus/ cytoplasm ratio, markedly irregular macronucleoli, and increased atypical mitotic activity [2]. In addition; molecular Ki67 over expression, p27-Kip1 decreased expression and cyclin D1 over expressions are more common in carcinomas than in adenomas and hyperplasia [3-5]. The loss of nuclear paraformin, which is supposed to be produced by the HRPT-2 tumor suppressor gene, is also a high predictor of sensitivity and specificity for parathyroid carcinoma [6].

Primary and curative treatment of parathyroid carcinoma is surgery. Surgical tumor resection with the same-side thyroid lobe, taking care not to have tumor rupture and cell spread is the standart therapy. More aggressive primary surgery reduces recurrence of risk and improves prognosis [7]. The most common site of metastasis in parathyroid carcinoma is lung [8-10]. According to the literature, lung metastases usually occurs many years after treatment of the primary lesion. In order to control excessive hypercalcemia and associated morbidity, surgical removal of functional pulmonary metastases is also required and in many cases have been achieved [11-13]. There are limited case reports by radiofrequency ablation therapy for numerous functional lesions on surgical inoperable localisation, but effectiveness is limited in this therapy yet [14].

Up to date, we found only one case has been published previously in the literature with lung metastasis for the first time [15]. Our case will be the second case with this respect.

In our case ;no results were obtained in preoperative imaging of primary lesion but the lesion could be detected only intraoperatively. As expected, surgical resection of the primary resection could not treat hypercalcemia and parathyroid hormone elevation due to remaining functional lung metastases. To control excessive hypercalcemia cinacalcet was given and docarbasin based adjuvant chemotherapy was planned for patient. Metastatectomy was done for detectable functional lung metastases. Diagnosis date was 2015 and the chemotherapy has already been completed, cinacalcet therapy is continues our patient survives to date.

The interesting aspects of our case are absence of a neck mass visualized by multimodal preoperative imaging methods, despite presence of significant hypercalcemia and hyperparathyroidism. No MIBI involvement in SPECT CT on primary parathyroid lesion but significant involvement of metastatic nodules. Parathyroid carcinoma is already rare; but atypical interesting presentations are very very rare. Generally, the large size neck mass, high level of PTH and calcium give us carcinoma-related clues. Even so we have to see local invasion or metastasis evidence to think of carcinoma. This unexpectedly small and nonvisualized tumor by preoperative multimodal imaging methods, with presenting functional MIBI involved lung metastases is really interesting to our knowledge.

Declaration of conflicting interests: The authors declared no conflicts of interest with respect to the authorship and/or publication of this article.

Funding: The authors received no financial support for the research and/or authorship of this article.

REFERENCES

1. Wei CH, Harari A, et al. Parathyroid carcinoma: update and guidelines for management. *Current Treat Options Oncol.* 2012 Mar;13[1]:11-23.
2. Vila Duckworth L, et al. Intrathyroidal parathyroid carcinoma: report an unusual case and review of literature. *Case Rep. Pathol.* 2013;2013:198643-48.
3. Verges MP, Herges HI, Kleiner DE, et al. The role of prognostic markers [MIB-1, RB and bcl-2] in the diagnosis of parathyroid tumors. *Modern Pathology.* 1997;10[1]:12-17.
4. Vasef MA, Brynes RK, et al. Expression of cyclin D1 in parathyroid carcinomas, adenomas and hyperplasias: a paraffin immunohistochemical study. *modern Pathol.* 1999;12[4]:412-16.
5. Erickson LA, Jin L, Wollen P, Thompson GB. Parathyroid hyperplasia adenomas and carcinomas: a differential expression of P27[kip 1] protein. *American Journal of Surgical Pathol.* 1999;23[3]:288-295.
6. Tan M, Morrison C, Wang P, et al. Loss of parafibromin immunoreactivity is a distinguishing feature of parathyroid carcinoma. *Clinical Cancer Research.* 2004;10[19]:6629-6637.
7. Owen RP, Silver CE, Pellitteri PK, et al. Parathyroid Carcinoma: a review. *Head and Neck* 2011;33:429.
8. Shaha AR, Ferlito A, et al. Distant methastasis from thyroid and parathyroid cancer. *Orl. J. Otorhinolarangeal. Relatspec* 2001 Jul-Aug;63[4]:243-9.
9. Obara T, Okamoto T, et al. Functioning parathyroid carcinoma, clinicopathologic features and rational treatment. *Semin. surg Oncol* 1997 Mar-April;13[2]:134-41.
10. Yamamoto T, Matsumura A. Comment on 'Clinical review 122: Parathyroid Carcinoma'. *J Clin Endocrinol Metab* 2001;86:5091.
11. Hundley JC, Albertson FA, et al. Resection of pulmonary methastasis from parathyroid carcinoma. *Am Surg* 2003 Sp;69[9]:779-83.
12. Van Hooven ER, Kievit J, et al. Successful resection for hepatic and pulmonary methastasis in a patient with parathyroid carcinoma. *Jpn J Clin. Oncol.* 1996 ap;26[2]:99-102.
13. Obara J, Okamoto T, et al. Surgical and medical management of patients with pulmonary methastasis from parathyroid carcinoma. *Surgery* 1993 Dec;114[6]:1040-8.
14. Tochio M, Takali H, et al. A case report of 20 lung radiofrequency ablation sessions for 50 lung methastasis from parathyroid carcinoma causing hyperparathyroidism. *Cardiovasc. Intervent Radiol.* 2010 Jun;33[3]:657-9.
15. Kuhlencordt F, Lozano-Tonkin C, Kracht J, Bartelheimer H. Pulmonary nodules as early sign of primary parathyroid carcinoma. *Deutsch Med Wochenschr* 1974 oct 4;99[40]:1957-60.

How to cite this article/Bu makaleye atıf için:

Cengiz H, Bař S, Tütüncü Y. A Case of Parathyroid Carcinoma with Presented Lung Metastases. *Acta Med. Alanya* 2018;2(3):206- 209. doi: 10.30565/medalanya.403856