

**Case Report**

# **A Case of Lung Cancer with Isolated Skip Metastasis to an External Iliac Lymph Node**

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## **Abstract**

**Introduction:** Isolated skip metastases to intra-abdominal lymph nodes from lung cancer are rare and management of such disease remains controversial.

**Presentation of case:** We report a case of lung adenocarcinoma in the right upper lobe with isolated lymph node metastasis to an external iliac lymph node detected by Positron Emission Tomography (PET) scan which was confirmed histopathologically.

**Conclusion:** Isolated intra-abdominal lymph nodes from lung cancer are a rare occurrence. In these patients, lymphadenectomy can be considered together with definitive treatment of the lung primary.

**Keywords:** Lung cancer; External iliac lymph node

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**Consent:** The patient has given informed consent for the case report to be published.

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## Introduction

Staging of lung cancer is important in determining the appropriate treatment of a patient and the prognosis. Lung cancer is usually diagnosed at an advanced stage, as it does not frequently present with symptoms. Symptoms usually only appear in advanced stage due to tumor invading into adjacent organs. In such cases, metastatic lesions are usually found in the regional lymph nodes, bone, liver and adrenals. Isolated skip metastases to external iliac lymph nodes without involvement of mediastinal or N1 lymph nodes is a very rare occurrence and has not been reported in the literature. We present a case of adenocarcinoma of the lung with skip metastasis to the external iliac lymph node with its treatment.

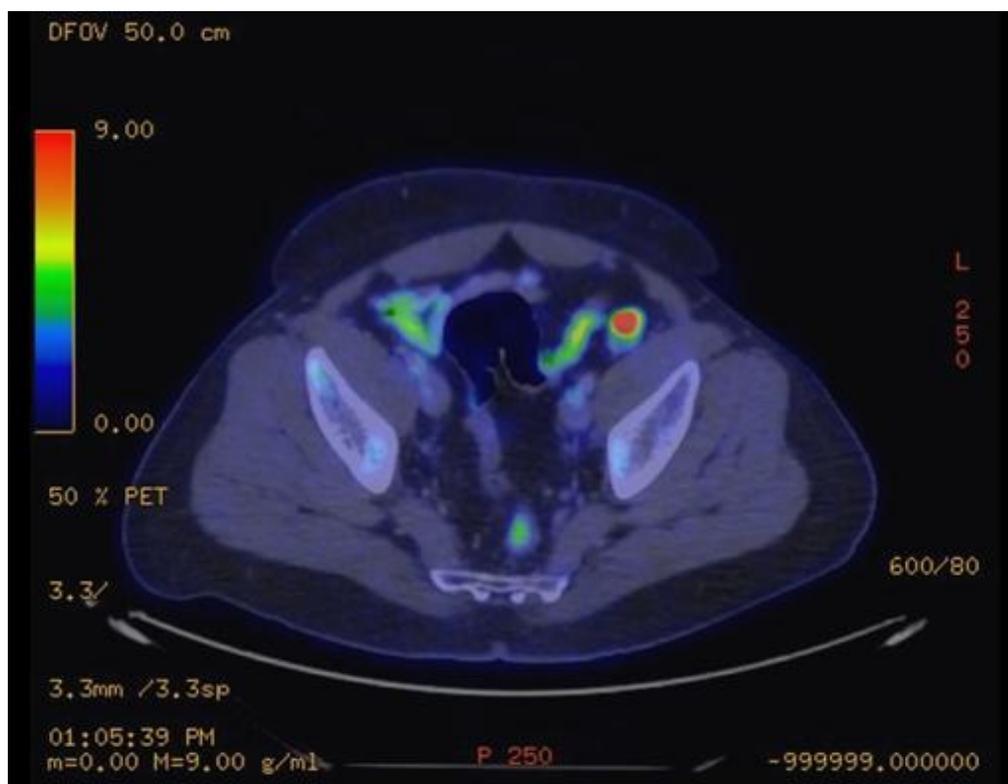
## Case Presentation

A 49-year-old male patient presented to us with a solitary pulmonary mass in his right upper lung that was detected incidentally on chest X-ray at a routine physical check-up. He smoked one pack a day for 35 years and consumed alcohol with a past medical history of osteoarthritis (OA) in his left knee and hypertension. Physical examination and laboratory data were unremarkable. A PET/CT scan performed showed a 4 x 2.7 cm right lung mass with right hilar lymphadenopathy and a fluorodeoxyglucose (FDG) avid left external iliac lymph node (Figure 1). In view of the patient's left OA knee, the FDG avid external iliac lymph node was attributed to inflammation and a biopsy was not performed. The patient underwent a mediastinoscopy with mediastinal lymph node sampling and a right upper lobectomy. Intraoperative frozen sections was done of stations 4R, 4L, 6R, 6L and 7 lymph nodes, which were all negative. Histologic examination of the right upper lobectomy specimen revealed a tumor measuring 5.0 cm in greatest diameter.

(T2N0). The tumor showed a predominant solid adenocarcinoma histology with areas of marked anaplasia. He recovered uneventfully from the surgery and was referred to the medical oncologist who advised a biopsy of the left external iliac lymph node. This was performed and a histologic and immunohistochemical study of the biopsy material showed a malignant tumor with an epithelioid morphology. However, lung origin could not be proven immunohistochemically. This case was discussed at a multidisciplinary tumor board meeting and an oesophagogastroduodenoscopy (OGD) and colonoscopy were advised to rule out other primaries. Both were performed and the findings were normal. The treatment considerations were that of palliative chemotherapy and surgical resection should there be no new sites of metastasis. Hence, a PET/CT scan was performed 2 months after his first scan which showed no other sites of disease but an interval increase in the size and FDG avidity of the previous left external iliac adenopathy (Figure 2). For definitive treatment, a left deep inguinal lymph node dissection was performed up to the aortic bifurcation. An extra-peritoneal approach was taken to minimize the morbidity of the surgery. The patient recovered uneventfully from the surgery and was discharged on post-operative day 2. A total of 15 lymph nodes were sampled. Histologic and immunohistochemical examination revealed a metastatic pleomorphic tumor which was negative for TTF-1, Napsin- and cytokeratin cocktail Oscar, but was positive for vimentin. This same immunohistochemical pattern of reactivity was seen in most anaplastic areas of the primary lung tumor and hence the metastasis was interpreted as a sarcomatoid carcinoma, consistent with lung origin. The patient was started on adjuvant Cisplatin and Vinorelbine. He remains well 4 months after surgery with no evidence of recurrence at 7 months after the initial diagnosis.



**Figure 1** PET scan showing FDG avid left external iliac lymph node



**Figure 2** PET scan 2 months later showing increase in size of FDG avid left external iliac lymph node

## Discussion

The most common sites of extra pulmonary metastases in lung cancer include regional lymph nodes, bone, brain, liver and adrenals. PET and CT scans are useful in assessing local tumor and lymph node involvement and in identifying such extra pulmonary metastases. Studies have shown that integrated PET/CT scans provide both anatomic and metabolic information and have a good negative predictive value as compared to individual PET or CT scans alone (98 vs. 89 percent). The sensitivity and specificity of PET/CT scans for detecting extra-thoracic lesions was 98 and 92 percent respectively<sup>[1]</sup>. However, when solitary extra-pulmonary lesions are detected by integrated PET/CT scans, false positive results are relatively high at 46 percent<sup>[2]</sup>. Hence tissue sampling is required on top of a positive PET/CT scan. In our patient, the PET/CT scan was able to identify the FDG avid lymph node in the external iliac region.

Isolated intra abdominal lymph node metastasis without involvement of the hilar, mediastinal, lobar, aortic and supraclavicular lymph nodes is extremely rare. There are only two cases reported in the literature of a lung primary with isolated metastases to an intra-abdominal lymph node without involvement of mediastinal and N1 nodes<sup>[3]</sup>. One case has also been reported of a sarcomatoid carcinoma of the lung with metastasis to the jejunum without involvement of mediastinal and N1 nodes<sup>[4]</sup>. It has been hypothesized that isolated intra-abdominal lymph node metastasis can occur due to a direct connection between pulmonary lymphatics and the thoracic duct, bypassing mediastinal nodes. This would allow tumor cell dissemination into the intra abdominal region<sup>[5]</sup>. However, unlike the two cases in the literature, our patient presented with metastases to an external iliac lymph node,

which is a relatively distal intra-abdominal lymph node without evidence of more proximal lymph node involvement. In addition, tumors of the right lung drain directly into the right lymphatic duct ending in the right subclavian vein, and are unlikely to involve the thoracic duct. Since there is no continuity of the lymphatic vessels to explain the involvement of isolated external iliac lymph nodes in this case, another hypothesis would be that such metastasis occurs at random due to systemic vascular seeding<sup>[6]</sup>. Such vascular seeding may occur at random or settle due to special affinity to lymph node tissue.

Using the American Joint Committee on Cancer (AJCC) Cancer Staging Manual 7<sup>th</sup> edition, lymph node metastases found in the external iliac region would be considered distant metastasis and hence would traditionally be treated with targeted therapy or chemotherapy. However, in this case, the primary tumor was surgically resectable and systemic spread was well controlled and only confined to one region. Hence, a surgical resection was considered and performed successfully. This is unlike the two other cases reported in the literature where both patients underwent chemotherapy without resection of the primary tumor. In one case, the patient died 2 months after chemotherapy with progression in size of the intra-abdominal lymph node. In the other case, resection of the isolated intra-abdominal lymph node was performed and the patient was alive and disease free 1 year after treatment, suggesting that resection of the primary tumor can be considered in view of the well controlled systemic spread.

## Conclusion

This case illustrates that a diagnosis of metastatic lung cancer to the external iliac lymph nodes, though rare should be considered when patients with lung cancer presents with a

suspicious finding on PET scan, and that in the absence of other metastases should perhaps be considered for lymphadenectomy. The treatment of such isolated skip metastasis to the intra-abdominal lymph nodes without involvement of the mediastinal and N1 nodes remains controversial. In our case, the patient underwent a lobectomy of the right lung primary, with staged right ilioinguinal lymphadenectomy, and remains disease free 4 months after surgery and 7 months after initial diagnosis.

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