

# Skin Metastases: Revealing a Lung Adenocarcinoma

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## ABSTRACT

Muscle metastases from bronchopulmonary cancer are rare; their revealing character is an exceptional fact. We report the observation of a muscular metastasis of the right arm, revealing a totally asymptomatic bronchial adenocarcinoma. The reason for our patient's consultation was a painful mass in the right arm. Imaging concluded that there was heterogeneous muscle collection without any erosion of the cortical bone of the humerus. The histological study of the tumor, after surgical excision, concluded in a metastasis of an adenocarcinoma, whose immune histochemical profile oriented towards a broncho-pulmonary or digestive origin. The chest X-ray was normal. Apart from the surgical excision of the muscle metastasis, the treatment included local consolidation radiotherapy associated with palliative chemotherapy. The evolution was marked by the absence of local recurrence, with nevertheless a dissemination of the lung cancer after 7 months of evolution patient deceased. Skeletal muscle metastases from lung cancer are rare and have a poor prognosis.

**Keywords:** Skeletal muscle; Bronchopulmonary cancer; Chemotherapy

## INTRODUCTION

Skeletal muscle metastases from lung cancer are rare and their revealing nature constitutes an exceptional fact. We report the case of a skeletal muscle metastasis of the right arm revealing pulmonary adenocarcinoma in a 64-year-old man, totally asymptomatic with a normal chest X-ray. Patient of the 64 year old, with no particular

pathological history, smoking 1 packet per day, initially consulted in the orthopedic department for a very painful swelling of the isolated right arm, evolving for 1 month. Physical examination revealed a deep mass in the posterolateral compartment of the right arm, 9 cm in long axis, of firm consistency, painful on palpation (Figure 1).



**Figure 1:** Mass of 1/3 of the posterior surface of the right arm.

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## CASE PRESENTATION

The ultrasound of the right arm showed a juxta-humeral muscle collection of 5 × 9 cm (Figures 2 and 3). The radiograph of the right humerus showed no bone damage (Figure 4). A large surgical biopsy removing the entire lesion en bloc was performed. Macroscopically, it was a friable, yellowish, finely encapsulated tumor of the vastus lateralis muscle (Figures 5-8). Histopathological and immunohistochemical examinations of the surgical specimen concluded that muscle metastasis of an adenocarcinoma could be of pulmonary or digestive origin (Figures 9-14). The chest X-ray was considered normal; the thoraco-abdomino-pelvic scanner (Figure 15).



Figure 2: No bone involvement.

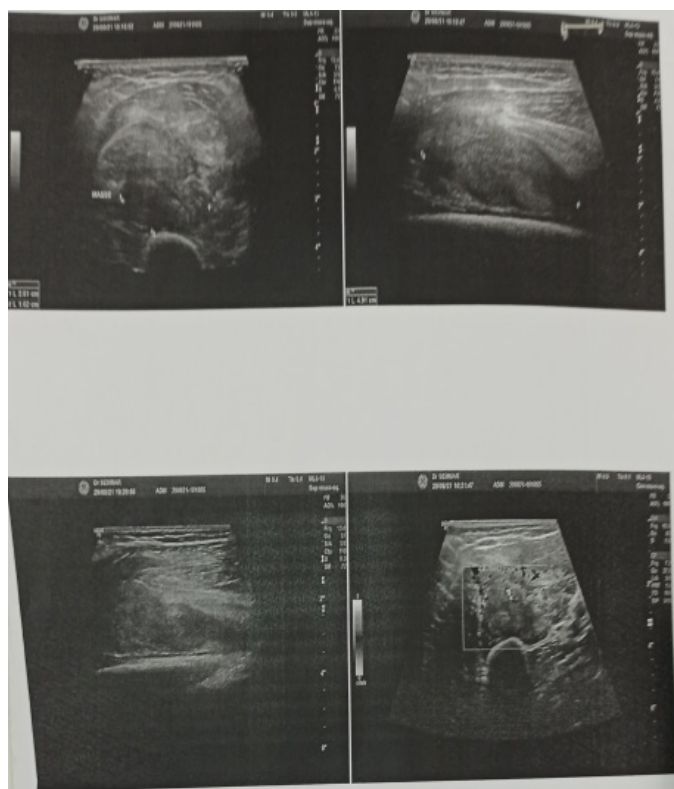


Figure 3: Aspect and ultrasound report: Concluded: Deep intramuscular tumor formation of the triceps brachii muscle.

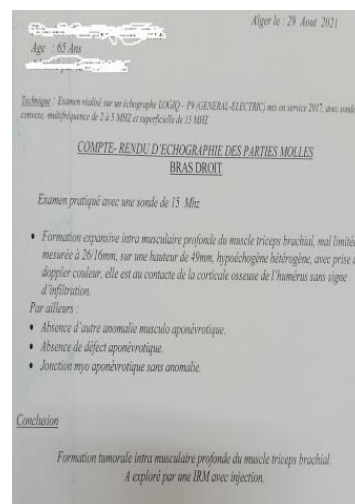


Figure 4: Deep intramuscular tumor formation of the triceps brachii muscle report.



Figure 5: At the incision normal aspect of the superficial fibers of the Triceps muscle.

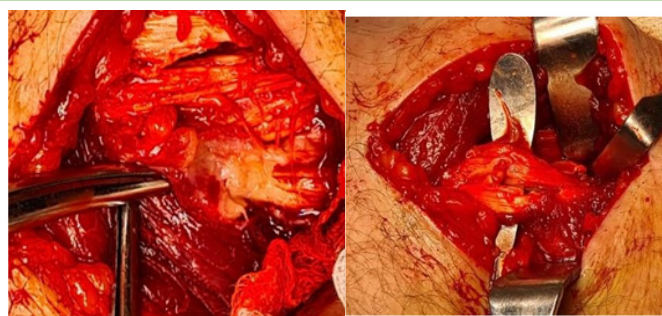


Figure 6: Encephaloid aspects of the deep muscle fibers of the triceps during surgery.

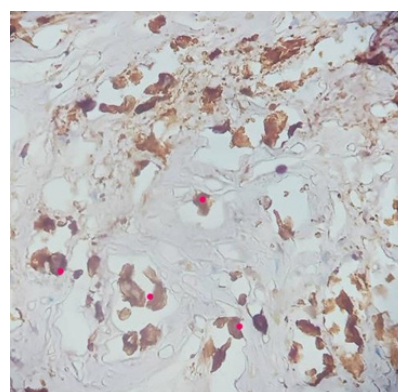


Figure 7: CK7 positive x40.

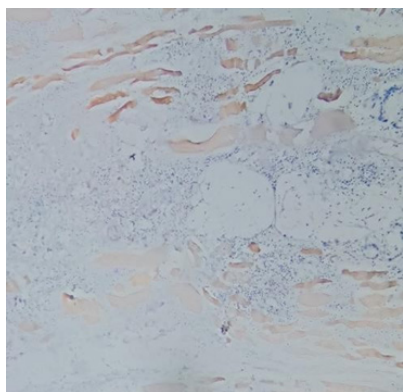


Figure 8: Negative desmin x10 (positive striated muscle internal control).

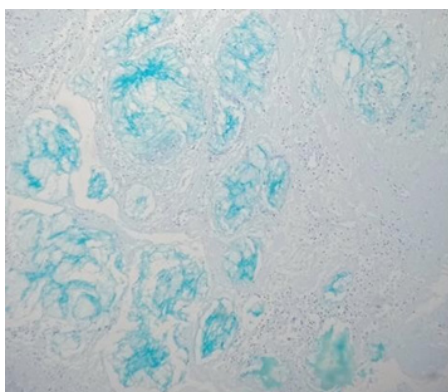


Figure 9: Pools of mucin: alcian blue (x10).

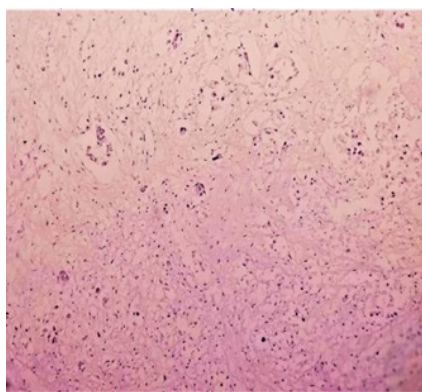


Figure 10: Hematoxylin and eosin staining (x10).

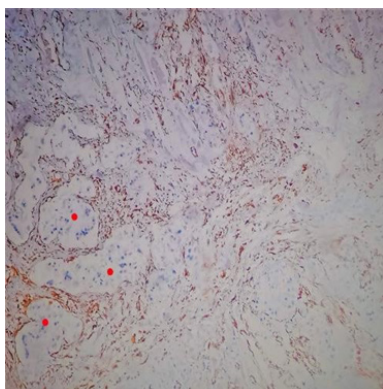


Figure 11: AML negative x10 (positive internal control).

Médecin : Pr. NEBCHI  
Service : EPH THENIA  
Date : 23/09/2021

N° : 2613/21

Nom : [REDACTED]  
Prénom : [REDACTED]  
Date de naissance : ? ANS

**COMPTE RENDU**

**Renseignements cliniques :**  
Masse de la face postérieure du bas droit.

**Macroscopie :**  
Il nous a été adressé 03 flacons.  
**Flacon 01 :** intitulé « tendon » :  
Un prélèvement mesurant (1.5x0.5x0.5) cm, d'aspect blanchâtre. Inclusion en totalité.  
**Flacon 02 :** intitulé « biopsie musculaire » :  
Un fragment musculaire et myxoïde grisâtre mesurant (3x1.5x1) cm inclusion en totalité.  
**Flacon 03 :** intitulé « tissu en contact avec l'os » :  
Un fragment mesurant (1.5x1.5x0.5) cm, d'aspect musculaire et fibreux. Inclusion en totalité.

L'examen histopathologique sur les coupes effectués montre un tissu musculaire strié siège d'une prolifération carcinomateuse, faite de rares structures glandulaires peu conservées essentiellement en périphérie de la biopsie musculaire (et du tissu en contact avec l'os) associée à de larges foyers de substance hyaline de la fibrose, et de substance mucineuse (Bleu alcian positif), représentant plus de 95 % de la tumeur.

Les glandes sont de petites tailles revêtues de cellules cylindriques aux noyaux atypiques et au cytoplasme éosinophile comportant des vacuoles de sécrétion (bleu alcian positif).

L'étude immunohistochimique réalisée se révèle.

AE1/AE3, CK7 : marquage positif des cellules tumorales.  
AML, INI1, myogenèse, CK20, GATA3 : absence de marquage.  
CDX2 : marquage positif.

**Conclusion :** aspect morphologique et profil immunohistochimique d'une localisation musculaire striée d'un adénocarcinome mucineux (ck7 et CDX2 positif).  
Une origine digestive à rechercher reste la plus probable.

Le : 10/10/2021

Figure 12: Report of the immunohistochemical study.

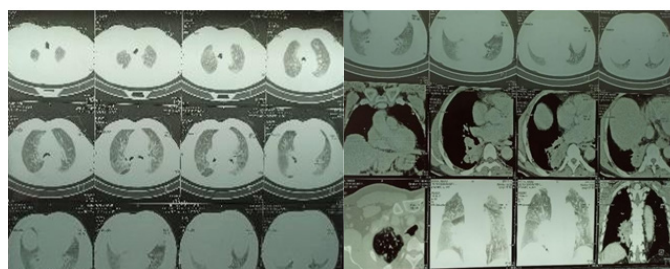


Figure 13: CT appearance.

ETABLISSEMENT PUBLIC HOSPITALIER DE THENIA  
SERVICE D'IMAGERIE MEDICALE  
Thenia, le 10/10/2021

NOM & PRENOM : [REDACTED] AGE : 64 ANS

**TDM THORACO ABDOMINO PELVIENNE**

**TECHNIQUE /**  
TDM abdominale en acquisition volumique de 2 mm reconstruite tout les 5 mm avant et après injection de contraste iodé complétées par des reconstructions multi planaires.

**RESULTATS //**

**ETAGE THORACIQUE :**

- Présence d'une masse tissulaire intraparenchymateuse au niveau du segment médial du lobe inférieur droit comblant la gouttière costo-vertébrale homolatérale, ovale à grand axe vertical, à contours spiculés parcourue par un bronchogramme aérien et d'une zone d'ectasie bronchique antérieure, se rehaussant de façon hétérogène, ménageant des zones de nécrose, mesurant 73mm de grand axe, présentant à décrire des rapport suivants :
  - EN ARRIERE : présente un contact de plus de 03cm avec la paroi thoracique postéro-médiane avec densification de la graisse extrapleurale en regard de la 8ème articulation costo-vertébrale droite sans lyse osseuse décelable
  - EN AVANT ET EN DEDANS : engaine le tronc intermédiaire et la bronche lobaire inférieure ainsi que ses collatérales. Engaine de façon hémicirculaire la branche artérielle lobaire inférieure.
  - Infiltrate la graisse médiastinale et entame la veine pulmonaire inférieure droite.
- On note un nodule sous pleural apical droit mesurant 12mm de grand axe
- Masse tissulaire pariétale apicale antérieure droite occasionnant une lyse perméative de l'arc antérieure de la première cote droite, à contours mal limités mesurant approximativement 34x16mm atteignant et comprimant la veine sous claviculaire droite sans liser graisseux de séparation

Figure 14: Thoraco-abdomino-pelvic CT report.

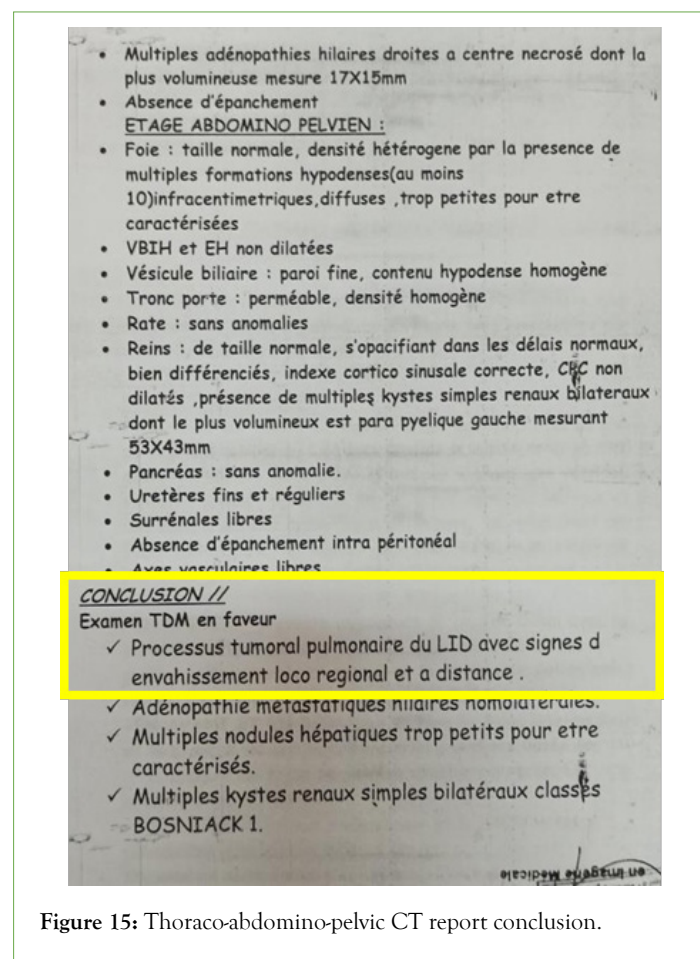


Figure 15: Thoraco-abdomino-pelvic CT report conclusion.

The tumor was classified as T2N0M1, and the patient was receiving palliative chemotherapy based on gemcitabine-cisplatin and radiotherapy. The initial response to treatment was considered satisfactory, with partial regression of the size of the primary tumour. After 7 months of evolution, there was a progression of the disease with metastases in the liver and kidneys, but without recurrence of the muscle metastasis in the deceased patient.

## RESULTS AND DISCUSSION

Muscle metastases remain rare despite the importance of the striated muscle mass and the richness of its vascularization. But if the incidence of these metastases barely exceeds 1% in clinical series, it is much higher, up to 16%, in autopsy series of cancer patients [1,2]. Muscle mobility and blood flow turbulence would be mechanical factors that can inhibit tumor growth in striated muscle [3]. Similarly, elevated oxygen pressure, release of toxic oxygen free radicals, ability of skeletal muscle to scavenge lactic acid, and acidic muscle pH would be chemical and humoral factors that would protect striated muscle from tumor invasion [4-7]. Muscle metastases have been reported in patients with leukemia, lymphoma, malignant melanoma, thyroid cancer lung cancer and other neoplasias [8-12]. Bronchopulmonary cancer would be the first responsible for this type of metastasis.

Berge et al reported a frequency of muscle metastases of 1% in 747 post-mortem examinations of patients with bronchopulmonary cancer [13]. Histologically, squamous cell carcinoma and adenocarcinoma are the most frequently involved histological types [14,15].

These metastases usually manifest in a known neoplastic context.

They are exceptionally revealing of the primary tumour, as in the case of our patient. They are plurifocal in 40% of cases and can theoretically affect all the muscles. However, they are more common in the psoas muscle, diaphragm, and muscles of the abdominal wall, pectoralis, deltoid, thigh muscles, intercostals, sternocleidomastoid, biceps, triceps and backbones. Clinically, these metastases can manifest as pain of varying intensity, a tumor mass syndrome associated or not with extra-articular stiffness. Imaging makes it possible to make the diagnosis of muscle tumor, but without being able to decide on its metastatic character. In ultrasound, muscle metastases appear in the form of heterogeneous hypoechoic images, more or less well limited Computed tomography reveals a mass of spontaneously hypodense tissue density, taking up the contrast heterogeneously, with the possibility of necrotic areas and calcifications. On MRI, these lesions are isodense in T1 sequence, hyperdense in T2 sequence, surrounded by peripheral edema, and their signal is strongly enhanced after injection of contrast product. However, this appearance is nonspecific and can be seen in the event of a primary tumour, abscess, hematoma or intramuscular collection. We did not perform either a CT scan or an MRI of the arms in our patient [16-18]. The anatomopathological diagnosis of muscle metastases can be made by needle biopsy, under ultrasound or CT scanning, or by surgical biopsy, then allowing en bloc excision of the tumour. The treatment of skeletal muscle metastases remains poorly codified. Surgical excision associated with local radiotherapy allows symptoms to be controlled and the quality of life of patients to be improved by reducing or eliminating muscle pain. If the primary tumor is controlled, the association with palliative chemotherapy would allow a relatively prolonged survival. Some observations have reported a partial improvement of symptoms with exclusive radiotherapy. The prognosis of muscle metastases remains pejorative, particularly during the evolution of lung cancer.

## CONCLUSION

Muscle metastases from lung cancer are rare; they are exceptionally revealing. Clinically, these metastases are revealed by a tumor mass syndrome, pain with or without extra-articular stiffness. They are rare for any tumor with a reported incidence greater than one percent. The most common sites of muscle metastases are the thigh muscles, iliopsoas and paraspinal muscles. Treatment is poorly codified. However, surgical excision associated with local radiotherapy allows control of symptoms and a certain improvement in the quality of life of patients. Imaging does not offer specific signs. The diagnosis is based on the anatomo-pathological study after surgical excision biopsy.

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