A secondary small cells neuroendocrine carcinoma localised in the bladder originated in lung tumour: a case report

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Abstract
Introduction
The bladder neuroendocrine carcinoma is a very rare pathological entity. While cases of primitive bladder tumour have been reported, small neuroendocrine carcinoma cells localised in the bladder and originating from the bronchial lung have never been reported. We report a case of secondary neuroendocrine carcinoma with small cells localised in the bladder; originating from lung tumour.

Case report
The patient was a 54-year-old Moroccan man; he was a chronic smoker of 40 cigarettes/day. During admission, the patient presented with full haematuria. Lesion investigations objectified bladder tumour. Therefore, the patient underwent an incomplete resection. The anatomico-pathological study demonstrated a bladder neuroendocrine carcinoma originating from the lung. The patient underwent two chemotherapy sessions with good outcome.

Conclusion
The neuroendocrine carcinoma is a very aggressive and fast-evolving tumour. Through this work, we incite suggesting the diagnosis of secondary neuroendocrine carcinoma bladder localisation originating from the lung in case of bladder tumour. This allows adapting the adequate treatment that would allow a favourable outcome.

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Introduction
Several bladder neuroendocrine carcinoma (NEC) localisations were reported. However, secondary bladder NEC localisation has never been described in the literature. Indeed, the NEC represents 0.5% to 1% of all bladder tumours\(^1\). This category of tumours demonstrates very poor prognosis\(^2\)-\(^4\).

We report a case of a secondary NEC bladder with a primitive tumour site which was localised in the broncho-pulmonary site. The diagnosis was based on the immunohistochemistry study. Through this work, we incite suggesting the diagnosis of a secondary bladder tumour localisation originating from the lung in all bladder NEC tumours.

Case report
Our case was a 54-year-old Moroccan man. The patient was a chronic smoker, with a rate of 40 cigarettes per day. On admission, the patient presented haematuria associated with bladder storage disorder. The pelvic ultrasound demonstrated a tumour in the left bladder wall.

The cystoscopy demonstrated a large bourgeoning tumour on the left lateral face of the bladder wall involving a large basis. Therefore, an extended and incomplete resection of the tumour volume was achieved. The anatomico–pathological investigation demonstrated a clear malignant tumoural process with a strong cellular density (Figure 1). The found tumour infiltrated the chorion and detrusor muscles. Besides, it was constituted by egg-shaped cells. Many apoptosis cells were observed, while the mitotic activity was elevated. The immunohistochemistry study demonstrated tumoural cells expressing the cytokeratine, a low chromogranine, the synaptophysine, and the CD56. The same study did not demonstrate any expression of CK20, PSA, and PS100 tests. Therefore, the diagnosis of the NEC tumour infiltrating the detrusor muscle was retained (PT2). The tumoural investigation was completed by a thoraco-abdominopelvic CT scan. This demonstrated a right superior condensation without delineation. These findings were consequents of a parenchymal alveolar nature of a primitive tumoural aspect (Figure 2a).

The pelvic CT scan demonstrated a thick nodule on the left lateral wall of the bladder with moderate contrast agent enhancement (Figure 2b). Considering the presence of a right primitive tumour in the lung demonstrated by CT scan, the anatomico–pathological samples were restudied aiming an immunohistochemistry assessment. The antibody, antiTTF1, confirmed the bladder localisation of the neuroendocrine carcinoma tumour with small cells originating from the broncho-pulmonary site. This study demonstrated that tumoural cells expressed the TTF1 (Figure 3). The final conclusion of secondary bladder NEC localisation with small cells of broncho-pulmonary origin was retained (Figure 3).

The patient underwent two sessions of chemotherapy – on etoposide doses of 120 mg/m\(^2\) for three days and the cisplatine doses of 100 mg/m\(^2\) for three weeks with good results.
Figure 1: The anatomical pathology demonstrated a neuroendocrine carcinoma of the bladder.

Discussion

The small cells neuroendocrine carcinoma tumour of the bladder represents an aggressive histological entity with a very poor prognosis. However, the secondary bladder NEC localisation with small cells originated from the lung has never been reported in the literature. Carcinoma with small cells is usually localised in the lung. Indeed, outside lung carcinoma has been reported; this included cutaneous, brain, nasal cavities, hypopharynx, larynx, trachea, thymuses, salivary glands, oesophagus, stomach, pancreas, bowel, colon, rectum, and womb. The bladder localisation of these tumours is rare and represents 0.5% to 1% of all bladder tumours. Cramer et al. were the first to describe this tumour in 1981. The NEC occurs by transforming the malignant physiological neuroendocrine cells of the mucous membrane of a normal bladder. Another theory suggests that multipotent cells in the basis of the urothelium are dedifferentiating during their evolution, and might produce a cellular population of the neuroendocrine type.

The NEC has almost the same epidemiological and clinical characteristics compared to urothelial tumours. The NEC occurs in older men with age varying between 50 and 90 years old with a male predominance and a men/women gender-ratio of 3.6. The main risk factor is tobacco smoking. The clinical profile is very similar to the urothelial bladder tumours associated with macroscopic haematuria and storage disorders. This tumour is rarely revealed by a para-neoplastic syndrome or by metastases. Sometimes, other histological types are associated; this includes urothelial carcinoma, rarely adenocarcinoma or epidermoid carcinoma.

Our patient presented haematuria and bladder storage syndrome without any associated endocrine syndrome. The cystoscopic aspect was without particular signs and did not allow diagnosis. The tumour localisation is frequently situated in the fronto–lateral level of the bladder. Similar localisation was found in our observation. The anatomico–pathological investigation demonstrated an undifferentiated tumour proliferation of small basophile cells organised in a cord map, in restricted mode with pseudo-bows aspects. The tumoural infiltration is often important with infringement of the detrusor muscular edge or the fatty perivesical tissue. Sometimes, other histological types are associated including urothelial carcinoma, rarely adenocarcinoma or epidermoid carcinoma. The diagnosis is often confirmed by the immunohistochemistry study that allows revealing the expression of neuroendocrine markers including synaptophysine, chromogranine A, neuron, and specific enolase. The non-expression of common leukocyte antigens allows elimination of lymphoma diagnosis. The anti-PSA antibody eliminates metastasis of prostatic carcinoma origin. In our case, the immunomarkers were positive for cytokeratine and weakly sensitive to chromogranine, the synatopsine, and the CD56. The tumoural cells did not express CK20, PSA, and PS100. The thoracoabdominopelvic CT scan was done after surgery within the framework of an extended assessment (Figure 2). This investigation demonstrated a right primitive lung tumour associated with a left bladder wall lesion.

Considering the presence of a primitive tumour within the right lung on the CT scan images; a complementary immunohistochemistry study was performed and found tumour cells expressing the TTF1. This allowed concluding the NEC localised in the bladder with small cells originating from the lung primary tumour (Figure 3). The differential diagnosis of this pathology included the urothelial and squamous bladder tumours.

Case report

The treatment of secondary bladder NEC is a critical issue since it has never been described in the literature. Our case is the first describing the bladder localisation of neuroendocrine carcinoma with small cells of broncho-pulmonary origin. Indeed, primitive NEC cases were reported in earlier literature from various centres. However, the absence of NEC background does not allow elaboration of any therapeutic consensus.

The reported primitive NEC cases underwent a surgical exeresis followed by chemotherapy based on cisplatin and/or associated with etoposide. The radiotherapy has minor interest. Our patient underwent two sessions of chemotherapy.

Conclusion

The neuroendocrine carcinoma of the bladder is a rare tumoural entity. The bladder localisation with small cells originated from the bronchial lung has never been reported in the literature.

Through this work, we incite suggesting the diagnosis of secondary NEC bladder localisation originating from the lung in case of any bladder carcinoma. This would allow adapting the suitable treatment for a better outcome.

Consent

Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

Abbreviations list

NEC, neuroendocrine carcinoma.

References

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Case report