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Case report

Scrotal wall metastasis from a primary lung adenocarcinoma

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A B S T R A C T

This a case of a 77 years old male heavy smoker, known to have Combined Pulmonary Fibrosis and Emphysema complicated by a primary invasive adenocarcinoma of the lung with bone metastasis, who presented with a two weeks history of right inguino-scrotal pain and swelling.

Imaging studies revealed a right paratesticular formation that appeared to involve the epididymis and the scrotal wall.

A biopsy of the mass showed morphological and Immunophenotypic features in favor of metastasis of an adenocarcinoma of the lung.

Based on our literature review, there are only few published cases about scrotal wall metastasis of a lung primary.

Introduction

Combined pulmonary fibrosis and emphysema (CPFE) was recently described as a separate entity more commonly in smokers. Studies suggest that this entity carries a worse prognosis and a higher risk of lung cancer.

Metastatic carcinoma to the scrotal wall is very rare.

We report a case of a carcinoma of the scrotum, metastatic from a primary lung adenocarcinoma in a heavy smoker patient with severe coronary artery disease (CAD) followed for a severe Combined Pulmonary Fibrosis and Emphysema (CPFE).

The discussion and literature review highlight the diagnostic challenges posed both by lung carcinoma in CPFE and by para testicular scrotal metastasis.

Case report

We report a case of a 77 years old male, heavy smoker, who presented with a two weeks history of right-sided scrotal hard swelling and right inguinal pain, along with worsening dyspnea and hypoxemia.

His past medical history is relevant for severe CAD and CPFE diagnosed two years prior to admission (PTA).

Three months PTA he was admitted with worsening dyspnea, bronchorrhea and on the CT scan of the chest a consolidation with air bronchogram of the right upper lobe of the lung. A bronchoscopy with bronchial and transbronchial biopsies revealed an invasive solid predominant primary adenocarcinoma of the lung with no detected mutations of Epidermal Growth Factor Receptor (EGFR) gene. Anaplastic Lymphoma Kinase (Alk) mutation was also negative. On Immunohistochemistry the bronchial biopsy cells stained positive for Thyroid Transcription Factor 1 (TTF1) nuclear stain and negative for p63. Bone metastasis was present and the patient received one course of chemotherapy.

On physical examination there was an ill-defined non tender right scrotal mass invading the right base of the penis, with a tender nodular spermatic cord at the level of the right inguinal region. The scrotal skin was fixed to the mass but showed no signs of inflammation. The right testicle could not be identified.

A scrotal Doppler ultrasound showed that the right testicle is normal and is pushed upward within the inguinal scrotal canal by the presence of a 12 × 5 cm heterogeneous formation entirely filling the right scrotum. There was no evidence of vascular compromise. The left testicle and epididymal structures were normal (Fig. 1A and B).

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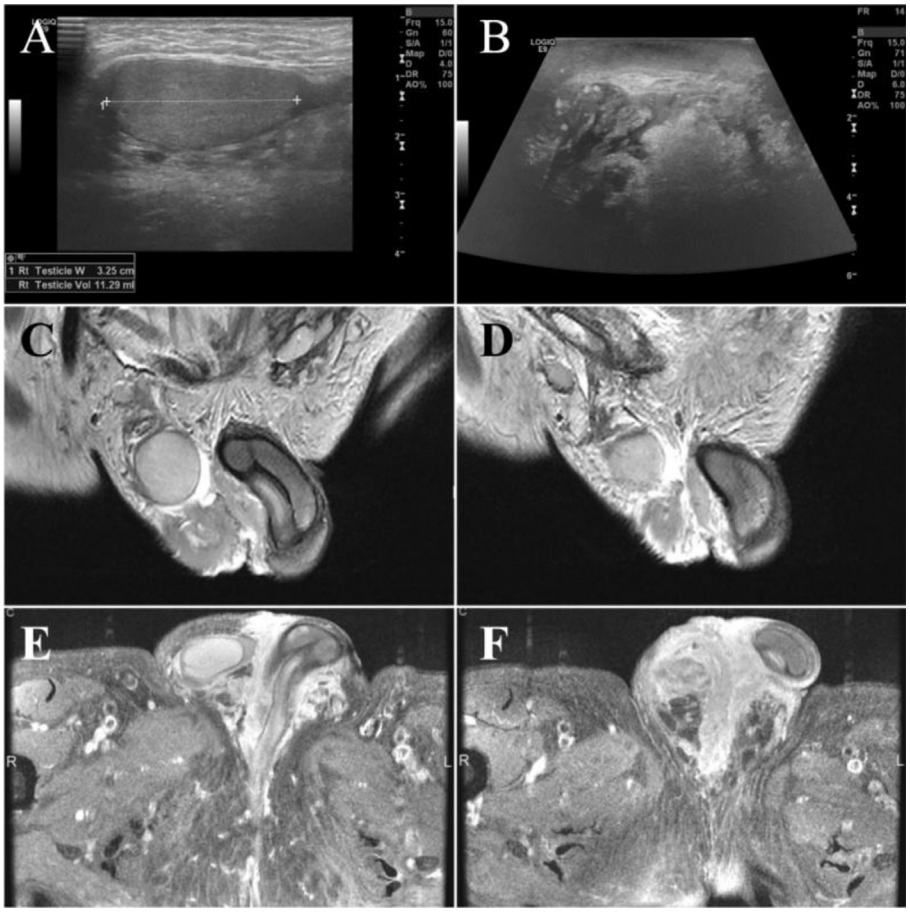

Fig. 1. Scrotal ultrasound (A, B). Inguino-scrotal MRI (C, D, E, F).

An Inguino-scrotal MRI with injection confirmed the previous results. The mass appears to be related to the epididymis and infiltrating the inferior and medial scrotal wall (Fig. 1C–F).

Subsequently an ultrasound-guided scrotal biopsy was performed and revealed morphologic and immunophenotypic features in favor of metastatic carcinoma of a lung primary. Tumoral elements stained positive for cytokeratin (CK) AE1/AE3, CK7, TTF1, and negative for p63 (Fig. 2).

Tumor markers showed that alpha fetoprotein (AFP) was normal, and beta-Human Chorionic Gonadotropin (Beta-HCG) was slightly elevated: 3.68 UI/mL (reference range < 2 UI/mL).

Based on these findings, the patient with CPFE, was diagnosed with a paratesticular metastasis from a primary invasive adenocarcinoma of the lung that had already metastasized to the pelvic bone. The scrotal metastasis seems to involve the right epididymis and the scrotal wall, sparing the testicle.

The patient died of respiratory distress nineteen days after admission.

Discussion

High-resolution CT scanning has enhanced clinical recognition of the simultaneous occurrence of emphysema and pulmonary fibrosis. Consequently there is increasing clinical and pathologic recognition of this syndrome known as combined pulmonary fibrosis and emphysema (CPFE) which is more common in smokers. These patients have different outcomes than patients with pure emphysema or pure fibrosis [1].

Several studies [2–4] suggested that Idiopathic Pulmonary Fibrosis (IPF) will increase the risk of lung cancer. Most lung cancers in patients with IPF also occur in lung zones where fibrotic changes are predominant. Although adenocarcinoma was regarded to be the most common type of lung cancer in patients with IPF, a growing body of evidence indicates that squamous cell carcinoma is also a frequent type of cancer in these patients.

In a large cohort with lung cancer, Usui et al. [5] found that survival was significantly worse for CPFE and lung cancer than for emphysema or IPF and lung cancer. These results suggest that chronic lung injury occurring in CPFE may influence the development and progression of lung cancer which may be related to “The Triple Hit” effects of smoking, emphysema and pulmonary fibrosis, all factors associated with lung cancer development.

Metastasis to the scrotal structures is rare. It involves most frequently the testis [6]. The most common primary site, excluding lymphoma and leukemia, is the prostate followed by the gastrointestinal tract, melanoma, kidneys and lungs. The majority of these cases is diagnosed at autopsy or is incidentally detected during therapeutic orchiectomy for prostatic cancer. Metastasis to paratesticular scrotal structures such as epididymis, spermatic wall is even rarer and also reported as single case reports. Metastasis to the scrotal wall is extremely rare.

A review of the literature could only identify sporadic cases of paratesticular metastasis, the primaries being from malignant melanoma, anal carcinoma, renal cell carcinoma [7], transitional cell carcinoma [8,9], gastric and colorectal carcinoma [10–12], desmoplastic small cell tumor [13], signet ring cell carcinoma [14],

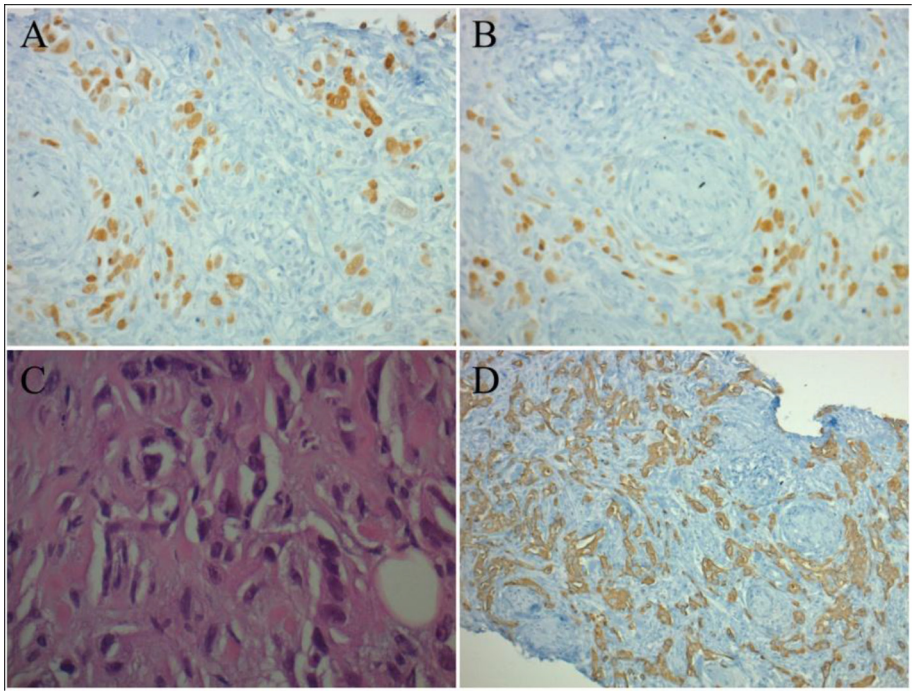

Fig. 2. Immunohistology of the paratesticular mass biopsy showing atypical cells staining positive for TTF1 (A, B), H&E (C) and CK7 (D).

adenocarcinoma of prostate [15]. Among those we found only four cases of primary lung carcinoma: two presented as painful scrotal wall thickening (carcinoma en Cuirasse) [16,17], the third one was described as a left scrotal mass in the inner layers of the scrotal wall, separate from the left testicle, epididymis and spermatic cord [18], the fourth case was a metastatic scrotal tumor from a lung adenocarcinoma with a micropapillary component [19].

Conclusion

CPFE is a devastating and progressive disease with poor prognosis. The risk of lung cancer in these patients seems to be higher with a worse prognosis.

In the case of our patient wide spreading systemic metastasis clearly illustrates the aggressive character of cancer with these particular clinico-histo-pathological features.

In any patient with a history of lung carcinoma and a paratesticular mass, metastasis from lung carcinoma should be included in the differential diagnosis.

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