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RESEARCH ARTICLE

RENAL METASTASIS OF BRONCHIAL SQUAMOUS CELL CARCINOMA

Fatima El allam[1], Fatima Moullablad[1], Jihane Jaouani[1], Mohamed Lakhal[1], Sara Gartini[1], Meriem Rhazari[1], Afaf Thouil[1,2] and Hatim Kouismi[1,2]

1. Department of Respiratory Diseases, Mohammed VI University Hospital, Faculty of Medicine and Pharmacy of Oujda, Mohammed First University, Oujda, Morocco.
2. Research and Medical Sciences Laboratory, Faculty of Medicine and Pharmacy of Oujda, Mohammed First University, Oujda, Morocco.

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Abstract

Renal metastases from bronchial squamous cell carcinoma are rare and generally occur at an advanced stage of the disease. We report the case of a 62-year-old chronic smoker who presented with dry cough, hematuria, and lower back pain. Radiological investigations revealed a right mediastinal pulmonary mass associated with a left renal lesion and secondary hepatic lesions. Bronchial biopsy confirmed squamous cell carcinoma, while renal biopsy combined with immunohistochemic al analysis established the diagnosis of a renal metastasis of bronchial origin. This case highlights the importance of histopathological confirm ation when evaluating any renal lesion in a neoplastic context.

Introduction:-

The kidney is the fifth most common site of metastatic spread for malignant tumors(1). However, the prevalence of clinically diagnosed renal metastases remains low, because they are often asymptomatic presentation. In patients with non-small cell lung cancer (NSCLC), the occurrence of distant metastases is a major adverse prognostic factor, particularly since they are most often diagnosed at an advanced stage. The most frequently reported metastatic sites include the lungs, brain, bones, liver, and adrenal glands(2). However, unilateral renal metastasis from primary lung cancer is relatively rare. We report a case of bronchial squamous cell carcinoma associated with unilateral renal metastasis.

Case Presentation:-

We report the case of a 62-year-old man, a chronic smoker with a history of 35 pack-years smoking history, who had been experiencing a dry cough associated with a deterioration in his general health for four months. The course of the illness was marked by the onset of hematuria associated with low back pain, which developed two months after the onset of symptoms.On physical examination, oxygen saturation was normal at 97% on room air, with an ECOG performance status was 1. Pleuropulmonary auscultation revealed no rales.

Corresponding Author:-FatimaEl allam
Address:-Department of Respiratory Diseases, Mohammed VI University Hospital, Faculty of Medicine and Pharmacy of Oujda, Mohammed First University, Oujda, Morocco.

A chest radiograph revealed right lower lobe atelectasis. This was supplemented by a chest CT scan demonstrated a right mediastinopulmonary mass associated with pulmonary emphysema.

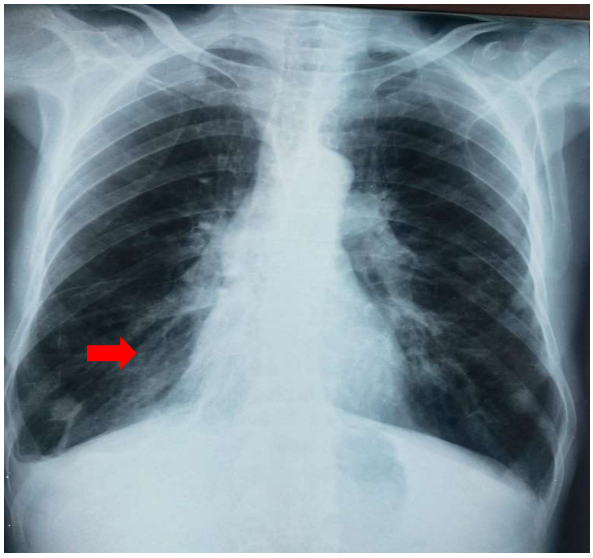

Figure 1: Frontal chest X-ray: right basithoracic atelectasis (red arrow)

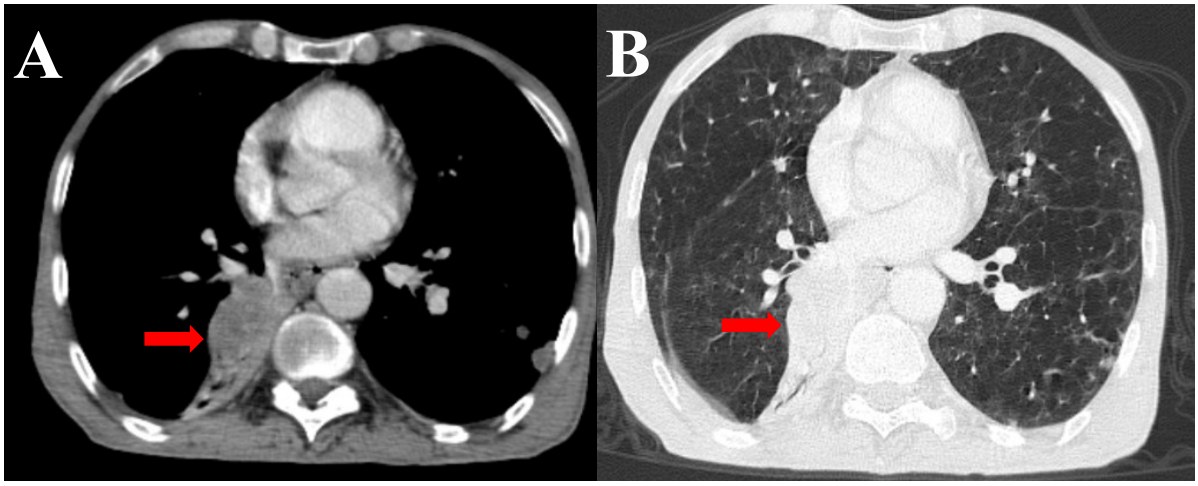

Figure 2: Axial chest CT images in mediastinal window (A) and lung window (B) showing a right mediastinal-pulmonary mass (red arrows).

Following the onset of hematuria associated with lower back pain, renal function tests were performed and demonstrated preserved renal function, with a urea level of 0.37 g/L, a serum creatinine level of 10 mg/L, and an estimated glomerular filtration rate (eGFR) of 84 mL/min/1.73 m². Urinalysis confirmed the presence of hematuria. Bronchoscopy revealed a necrotic nodule at the entrance to the right lower lobe bronchus. Pathological examination of the bronchial biopsy was consistent with squamous cell carcinoma.

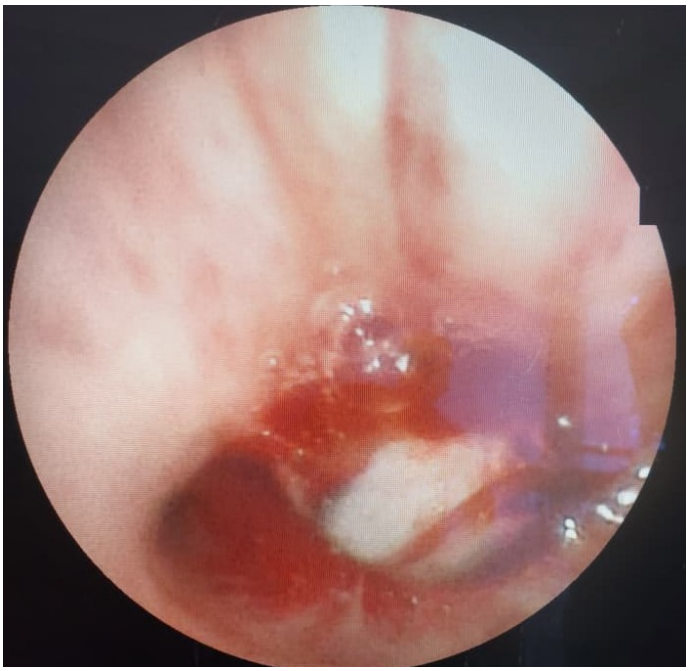

Figure 3: A Bronchoscopy showing a necrotic nodule at the entrance to the right lower lobe bronchus.

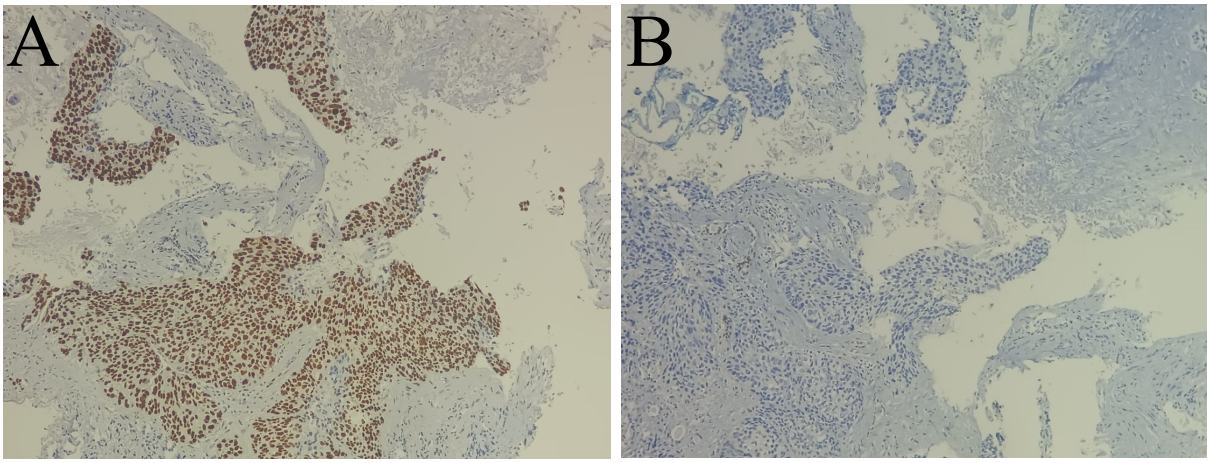

Figure 4: Immunohistochemical study of the bronchial biopsy showed positive staining of tumor cells for P40 (A) and negative staining for TTF1 (B).

As part of the staging workup, an abdominal-pelvic and brain CT scans were performed, revealing a left renal mass that enhanced after contrast injection, associated with secondary-appearing hepatic nodules. No intracranial metastatic lesions were identified. An ultrasound-guided renal biopsy was subsequently performed. Histopathological and immunohistochemical analyses confirmed the diagnosis of renal metastasis from a bronchial squamous cell carcinoma. The tumor cells were positive for p63 and p40 and negative for CK20, CK7, and TTF-1.

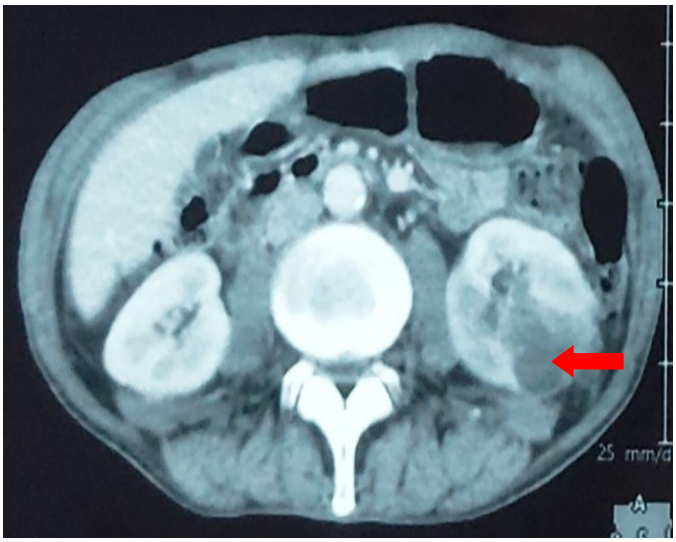

Figure 5: Axial abdominal CT showing a renal mass (red arrow).

The final diagnosis was metastatic bronchial squamous cell carcinoma with metastases to the kidneys and liver. The multidisciplinary team decided to initiate palliative chemotherapy.

Discussion:-

The kidney is the fifth most common site of metastasis for malignant tumors. Data from autopsy series report an incidence of renal metastases ranging from 2.36% to 12.6% (2). Renal metastases are most often multiple and bilateral or occur within the context of widespread metastatic disease involving multiple organs (3), as illustrated in our case by the combination of renal and hepatic involvement. However, isolated renal metastases are rare; cases reported in the literature have shown that the primary tumor site is, in descending order of frequency, the lung, colon/rectum, breast, soft tissues, and thyroid(4). In a study conducted by d'Adamy and al. involving 3,472 patients who underwent partial or total nephrectomy over a 20-year period, only 13 cases of solitary renal metastases were identified, five of which (38%) were of pulmonary origin (3).

Patients with renal metastases are generally asymptomatic, and the diagnosis is often incidental, being made during imaging studies. More rarely, they may present with gross hematuria, abdominal pain, or low back pain (5,6). In our case,the symptoms of hematuria and low back pain prompted further investigation for secondary renal involvement. The diagnosis of renal metastasis is generally based on imaging studies, particularly abdominal computed tomography (CT), magnetic resonance imaging (MRI), or positron emission tomography (PET)(7). However, distinguishing between a primary renal tumor and a secondary lesion can be difficult based solely on radiological criteria. Certain features may nevertheless suggest a metastatic origin, particularly the presence of multifocal, endophytic lesions that are isodense or hypodense relative to the renal parenchyma, as well as poor enhancement following intravenous contrast administration (8,9). Histological confirmation, supplemented by immunohistochemical analysis, is essential. Markers of squamous differentiation, such as p40 and p63, together with the absence of TTF-1 expression, support a bronchial squamous cell carcinoma origin(10).

The treatment of solitary renal metastases relies primarily on systemic chemotherapy. Adamy et al. evaluated the role of nephrectomy in this context and suggested that it may be associated with improved survival(3). Furthermore, Verma et al. have proposed stereotactic body radiation therapy (SBRT) as a therapeutic alternative for the treatment of symptomatic solitary renal metastases, particularly when non-small cell lung cancer is the primary tumor(6).However, in the absence of randomized controlled trials, no therapeutic strategy has demonstrated clear superiority. Therefore, management must be individualized according to each patient's clinical profile(11). Conversely, in cases of multiorgan metastatic spread, as in our patient, treatment relies primarily on a systemic palliative approach, including chemotherapy and, more recently, immunotherapy.

Conclusion:-

Renal metastases from bronchial squamous cell carcinoma are a rare secondary site, often indicative of advanced, disseminated disease. Diagnosis remains challenging due to the low specificity of clinical and radiological findings, necessitating histopathological examination and immunohistochemistry to confirm the pulmonary origin.

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