Metastatic and Aggressive Renal Cell Carcinoma Mimicking Unilateral Choroidal Tuberculoma

Resumo

A disseminação metastática ocular de tumores sistêmicos é incomum, ocorrendo principalmente na coroide e em pacientes idosos. O câncer de pulmão é considerado o principal tumor metastático ocular em homens, contudo, outras doenças oculares, como as uveítes e lesões retinianas, podem mimetizar os implantes secundários tumorais nos tecidos oculares. O aspecto fundoscópico das neoplasias da coroide pode apresentar similaridade com outros processos infecciosos, especialmente o tuberculoma de coroide. Dessa forma, a investigação clínica detalhada é de grande importância no diagnóstico de pacientes com massas coroideanas, especialmente quando configuram a primeira manifestação de uma doença sistêmica e grave. Relatamos um caso raro de metástase coroideana como primeira manifestação clínica do carcinoma de células renais em um homem jovem, mimetizando um tuberculoma de coroide.

Descritores: Carcinoma; Coroide; Metástase; Rim; Tuberculose

Abstract

Ocular metastases from systemic tumors are uncommon. The choroid is the most frequent target, with a preference for elderly individuals. Lung cancer is the predominant primary tumor metastasizing to the males' eyes, although other ocular conditions, such as uveitis and retinal lesions, can mimic secondary tumor implants in ocular tissues. On fundoscopy, choroidal metastasis resembles other infectious processes, especially choroidal tuberculoma. Therefore, patients presenting with choroidal masses should be submitted to detailed clinical investigations, especially if the mass is the first manifestation of systemic and severe disease. In this report, we

describe a young man with metastatic choroidal tumor secondary to papillary renal cell carcinoma mimicking unilateral choroidal tuberculoma.

Keywords: Carcinoma; Choroid; Kidney; Metastasis; Tuberculosis

Introduction

Tuberculosis (TB) is an airborne infection caused by *Mycobacterium tuberculosis* (MTB), typically inducing the formation of granulomas in the lungs and occasionally in extrapulmonary tissues.Ocular involvement is observed in 1% of patients with pulmonary TB. The diagnosis of ocular TB can be challenging and relies on five pillars: i) clinical condition compatible with ocular TB (especially in the presence of inflammation), ii) microbiological confirmation of intraocular MTB, iii) systemic evidence of TB (positive skin or serum tests and compatible pulmonary or extrapulmonary lesions), iv) ruling out other possible causes, and v) positivity on the MTB purified protein derivative (PPD) test within 4-6 weeks.[1] Less commonly, ocular TB may present as choroidal tuberculoma (a yellowish subretinal choroidal mass), usually in association with exudative retinal detachment and mimicking an infectious abscess or ocular tumor.[2]

Most malignant ocular tumors are uveal metastases, nearly 90% of which affect the choroid. The most frequent primary sites are the breasts (47%), lungs (21%), and gastrointestinal tract (4%), but in almost 15% of cases the primary site is unknown at the time of diagnosis. Most choroidal metastases have an unspecific presentation: a single yellowish lesion, usually in the posterior pole, associated with subretinal fluid.[3] Ultrasonography (US) is an important aid in the differential diagnosis of intraocular lesions. Uveal metastases display medium to high internal echogenicity and a smaller height/base ratio than intraocular melanomas,[4] but it can be difficult to distinguish metastases from primary tumors and lesions secondary to trauma or infections, such as choroidal tuberculoma.

In this case report, we describe a rare case of choroidal metastasis from renal cell carcinoma (RCC) in a young male patient with tuberculosisand highlight the importance of detailed and timely investigations of neoplasia in ocular masses.

Case report

A 44-year-old black Brazilian male complained of pain in the left eye (OS) for 20 days, with no relation to eye movement although associated with reduced visual acuity. The patient reported having lost 10 kg in one month and suffering from a dry cough in the preceding 2 weeks. No other symptoms were reported, and no ocular, systemic and familial antecedents were identified.

The ophthalmologic evaluation revealed a best-corrected visual acuity (BCVA) of 20/20 in the right eye (OD) and counting fingers at 1.5 m in OS. No changes were found on biomicroscopy of the anterior segment in either eye (OU), including no anterior chamber or anterior vitreous reaction. The intraocular pressure was 12 mmHg in OU. Fundoscopy was normal in OD, but in OS a large yellowish choroidal lesion was observed in the temporal region of the posterior pole, with a small subretinal hemorrhage, associated with serous detachment of the perilesional retina (Figure 1A). US of OS confirmed the existence of a choroidal mass temporally to the fovea, with medium and homogenous internal echogenicity, associated with serous retinal detachment (Figure 1B).

Serology for syphilis, toxoplasmosis, and HIV were negative, and the PPD test was positive (10 mm of induration). Chest computed tomography (CT) showed i) multiple nodules with soft tissue density throughout the lung parenchyma, especially on the right side (Figure 2A), ii) lymph node enlargement in the right paratracheal and hilar chains and in the carinal chain, with enhancement suggestive of necrosis, and iii) a small cortical Bosniak category I cyst in the

right kidney (Figure 2B). The bronchoscopy with lung biopsy revealed signs of anthracosis and unspecific inflammation, but the bronchoalveolar lavage was positive (3+) on bacilloscopy for MTB. Based on the diagnostic suspicion of disseminated systemic TB, the patient was referred to an Infectologist and started on RIPE (rifampicin, isoniazid, pyrazinamide, and ethambutol).

However, the lesion worsened, even after anti-tuberculin treatment. An extended evaluation of the renal cyst, performed with abdominal CT, revealed i) multiple hepatic and adrenal glands nodules, ii) a partially exophytic expansive nodular lesion in the lower cortex of the right kidney, with heterogeneous enhancement by contrast and central areas of necrosis/liquefaction, of probable neoplastic etiology (Figure 2B). Liver nodule fragments (Figure 3) obtained by transcutaneous biopsy were submitted to immunohistochemistry for vimentin, PAX-8 and cytokeratin 7 (all positive) and cytokeratin 20 and thyroid transcription factor 1 (both negative), confirming the diagnosis of papillary RCC. A diagnostic vitrectomy was scheduled but the patient died of respiratory failure 16 days after the diagnosis of RCC.

Discussion

Ocular metastases are uncommon and generally target the choroid. The prevalence of neoplastic dissemination to ocular tissues depends mostly on the primary site and the patient's sex.[3] In male patients, ocular metastases are predominantly from lung carcinoma; in women, the primary site is most often breast adenocarcinoma.[5]

RCC accounts for 1-3% of all malignant visceral neoplasms, with a preference for the male sex, and is associated with high mortality rates.[6] Representing only 10% of all cases, papillary RCC is one of the least prevalent subtypes.[7] The classic triad of clinical symptoms include flank pain, gross hematuria, and palpable renal mass, but only 10% of cases display all three symptoms at the time of diagnosis (an indication of advanced disease).[7] RCC metastasizes at an early stage, targeting mainly the lungs, regional lymph nodes, bones, liver, and brain.[8]

According to one study, RCC is responsible for only 3.57% of all ocular and orbital metastases.[9] However, the fact that nearly 90% of patients with ocular tumors present no systemic symptoms at the time of diagnosis justifies the inclusion of metastatic RCC in the differential diagnosis.[9]

In the present case, the diagnosis was confounded by several circumstances: i) ocular metastasis of RCC is rare, ii) the ocular symptoms were practically the only manifestations of the disease, iii) tuberculosis is very prevalent in Brazil (considered one of the 20 countries with the highest estimated number of incident TB cases in the world),[10] iv) choroidal lesions tend to be unspecific, and v) the patient condition mimicked choroidal tuberculoma. The patient was examined against the classic five pillars of TB (clinical condition compatible with ocular TB; microbiological confirmation of intraocular MTB; systemic evidence of TB; ruling out of other causes; positivity on the tuberculin skin test),[1]but showed no signs of inflammation in the anterior chamber or vitreous - a typical finding in ocular infections of immunocompromised subjects. Moreover, the pulmonary images were not typical of TB and the ocular lesion worsened even after anti-tuberculin treatment. Diagnostic vitrectomy, with cytopathologic analysis to identify tumor cells or polymerase chain reaction (PCR) analysis for MTB, was not possible due to the patient's untimely death. However, the absence of intraocular inflammation during the entire follow-up, the failure of the RIPE regimen to reduce the lesion and the presence of metastatic RCC allowed us to diagnose the patient with metastatic choroidal tumor secondary to papillary RCC.

Conclusion

The etiology of intraocular tumoral lesions can be difficult to establish. Uveitis and neoplasms are the main differential diagnoses. The endemicity of certain infectious diseases can lead to a misdiagnosis of uveitis if the case is not thoroughly investigated. RCC is not a common tumor, and ocular involvement is particularly rare. Diagnosis is made more difficult by the

frequent absence of systemic signs and symptoms at the time of the ocular manifestation. Ophthalmologists are advised to conduct a detailed clinical investigation (including lab tests and imaging) of patients with intraocular masses. In this report, we describe a young man with positive bacilloscopy for MTB presenting a metastatic choroidal tumor secondary to papillary RCC initially mimicking unilateral choroidal tuberculoma.

Ethics approval: The study followed the principles of the Declaration of Helsinki and was approved by our Institutional Review Board Ethics Committee (CAAE 31577520.4.0000.5071).

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