

Benefit of surgery in presence of orbital metastasis

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None of the authors has conflict of interest with the submission.
No financial support was received for this submission

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Purpose: Malignant tumors metastatic to the orbit are rare and only about 5% of orbital tumors are metastasis. We report on orbital surgery in a patient with orbital metastasis from small cell lung carcinoma (SCLC).

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Keywords: metastasis; orbit; small cell lung carcinoma; surgery

Introduction

Malignant tumors metastatic to the orbit are rare and only about 5% of orbital tumors are metastases (1). The most common metastatic malignancies are breast, lung and prostate (1). In 10-30% of cases, the onset of ocular/orbital symptoms predates the detection of the primary tumor, especially in case of lung and kidney tumors (1). However, in ~10% of the cases, the primary site remains unknown despite thorough examination (1). The small cell lung carcinoma (SCLC) is one of the most aggressive metastatic tumors and common sites of metastasis include bone, liver, lymph nodes, the central nervous system, adrenal gland, subcutaneous tissue and pleura (2). We report here on a case of SCLC with orbital metastasis (OM) as first presenting manifestation. We will also discuss treatment decisions in light of other studies.

Case report

A 75-year-old man came to the Emergency Department of our Hospital because of pain in the left orbital region and proptosis. He has complained over the past 3 months of a progressive reduction in visual acuity (VA) and weight loss (about 12 kilograms). He was a heavy smoker (about 25 cigarettes/day). A head CT scan showed left retrobulbar mass compressing the optical nerve (ON) (Figure 1A, arrow). A chest CT scan showed a round-shaped solid mass (diameter of ~20 mm) at the apex of the left inferior lobule of the lung (Figure 2). A total-body contrast-enhanced CT scan confirmed the presence of a mass suggestive of a primary adenocarcinoma of the lung, with widespread involvement of lymphnodes of the lung hylum, meadiastinum, supraclavear and lower neck regions. The chest surgeon, in light of the

radiologic picture, decided not to perform intervention.

A decrease of VA in the left eye (vision of 6/10) was recorded. No abnormalities of oculomotion and visual field were present. Ophthalmoscopy revealed disc swelling, “flame hemorrhages”, twisting and edematous vessels on the left and arteriolar narrowing on the right. Fluorescein angiography (Figure 3) was also performed, showing epipapillary teleangiectasia, peripapillary “flame hemorrhages” and late fluorescence (diffusion) in the optic disc.

Despite total body CT scan showed an advanced thoracic spread of the disease and thoracic surgeon ruled out surgery, we decided to operate the patient in order to preserve VA and to make a histologic diagnosis.

One week after the admission, we performed a surgical intervention on the left orbit through a lateral approach (Kronlein). In particular, after bending the lateral rectus muscle superiorly, the tumor was progressively debulked and removed, paying attention to preserve the integrity of the optic nerve, which was compressed but not infiltrated by the tumor.

The complete removal of the mass was documented by a head CT scan (Figure 1B). Histologic report (Figure 4) showed infiltration of the connective and muscular tissues of the orbit due to the presence of a poorly differentiated and partially necrotic carcinoma with a high proliferative index. Morphological and immunophenotype features were suggestive of a non-anaplastic SCLC. Post-operative course was uneventful and a complete restoration of VA was obtained and confirmed on a follow-up visit 30 days post-surgery. The oncologist suggested also treatment with chemo- and radiotherapy, which will be soon performed in a different medical Institution, because the patient will

move to a different city. Unfortunately, after discharge from our Hospital the patient was not contactable and thus we could not assess his clinical status after treatment with chemo- and radiotherapy.

Discussion

No other cases of SCLC with OM and ON compression and considered eligible for orbital surgery are known. Instead, there are some cases similar to our patient, but treated differently. In 3 cases (3,4,5) with impairment of VA by compression or stretching of the ON, the tumor (histologically SCLC) extended outside the orbit on the surface of the skull and response to chemo- and/or radiotherapy was highly variable. Zarogoudilis & al. described a patient with OM from lung adenocarcinoma and visual impairment due to ON compression treated with chemo- and radiotherapy to the orbital mass, without improvement of VA (6). Char & al. presented a series of 31 patients with OM (1). They used tumor debulking in patients with primary orbital tumor; in patients refusing needle biopsy; in those cases with solitary OM; and in patients with decreased VA from ON compression. Only in the last setting the authors obtained good temporary results.

The prognosis in patients with SCLC is dismal. Estimated median survival time is 10 months (7) whereas in patients with OM is between 10 and 20 months (1). After a correct diagnosis, the choice of treatment is based on the systemic status of the patient and on the possible presence of ON compression (1). The goal of treatment should focus on preservation and restoration of VA as soon as possible. Since these patients have a limited survival time, the preservation of VA has an important impact on the quality of life. Despite the reported cases of VA recovery after several weeks of radio-

and/or chemotherapy (3,4), such a good response is somehow unpredictable (5,6). In our opinion, a debulking orbital surgery that relieves ON compression should be offered to the patient whenever is possible.

References

1. Char DH, Miller T, Kroll S: Orbital metastases: Diagnosis and course. Br J Ophthalmol 1997; 81:386-390
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Response to reviewers

Ref.: Ms. No. BSBO-D-12-00013

Metastatic orbital localization of small cell lung carcinoma

Please note that edits to manuscript are highlighted in yellow

Reviewer #1

The content :

1. The paper is about a case report of compressive neuropathy due to orbital metastasis and which benefited from surgical excision.

This is a valuable observation, since it highlights the importance of offering the best possible care even in presence of overt metastatic disease, and this despite the unpredictability of the results.

We thank the reviewer for his/her appreciation

2. Their conclusion that whenever adapted to the situation, surgery "should be offered" to the patient is sound. However it does not correspond to the meaning of the conclusion of the abstract, which states that such surgery "should be performed". In this respect, the formulation of the abstract has to be adapted accordingly.

Done

3. The title of the paper does not describe well its main interest, which is about the possible benefit of orbital metastasis debulking in selected cases.

According to reviewer suggestion, we have changed the manuscript title as follows: "Benefit of surgery in presence of orbital metastasis"

4. The authors are submitting their report before the treatment has been completed. In the discussion section they are discussing the aspect of the survival time. They have to explain why they opted not to wait for a longer follow-up.

We have added the following sentence at the end of the case report to explain this: "Unfortunately, after discharge from our Hospital the patient was not contactable and thus we could not assess his clinical status after treatment with chemo- and radiotherapy"

The format :

1. The paper is about a case report. The statement of the authors that : "The study was performed with informed consent and following all the guidelines for experimental investigations required by the Institutional Review Board or Ethics Committee of which all authors are affiliated" is equivocal, since it is not a study. Conversely, in case the authors claim that the surgery offered to the patient was actually investigational, they would have to lay down the protocol of the study. Also, an observational case report should not be laid down with "Material, methods and results" paragraph title.

We agree with reviewer and have made the changes he/she suggested

2. The claim of the beneficial effect of the surgery is based solely on the evaluation of the visual acuity pre-op and post-op. In presence of such orbital pathology, at least visual fields are required to correctly characterize the optic neuropathy. It seems also likely that ocular motility disturbance was present.

In our case, no abnormalities of oculomotion and visual field were present. In this respect, we have added a sentence to the Case report. Moreover, we present a more detailed picture of the ophtalmoscopic examination and also findings from fluoresceine angiography.

3. The CT scanner images provided are scant if not poor. The post-operative view in the sagittal plane is not informative, instead the same plane as in the pre-op view should have been used.

In the revised version of the manuscript, we have changed the sagittal view with the axial view of the CT scan, as suggested by the reviewer

4. In the same register, considering the large size and intraconal location of the tumor, a more detailed operative description would have improved the case report.

We have provided a more detailed description of the operation, as suggested by the reviewer

5. A few minor typos have been corrected and highlighted in yellow.

Done

Reviewer #2

1. The sagittal orbital scan as figure 3 does not inform the reader about the success of the surgical procedure particularly after a so short follow-up. Will the patient have adjuvant orbital radiotherapy?

In the revised version of the manuscript, we have changed the sagittal view with the axial view of the CT scan, as also suggested by reviewer 1. The patient has moved to a different city and, as we have added, “unfortunately, after discharge from our Hospital the patient was not contactable and thus we could not assess his clinical status after treatment with chemo- and radiotherapy”.

2. It would be interesting if some histopathological images were included in the article.

Done

3. Some spelling errors for example: page 3 sigarette !

Done

Figure1
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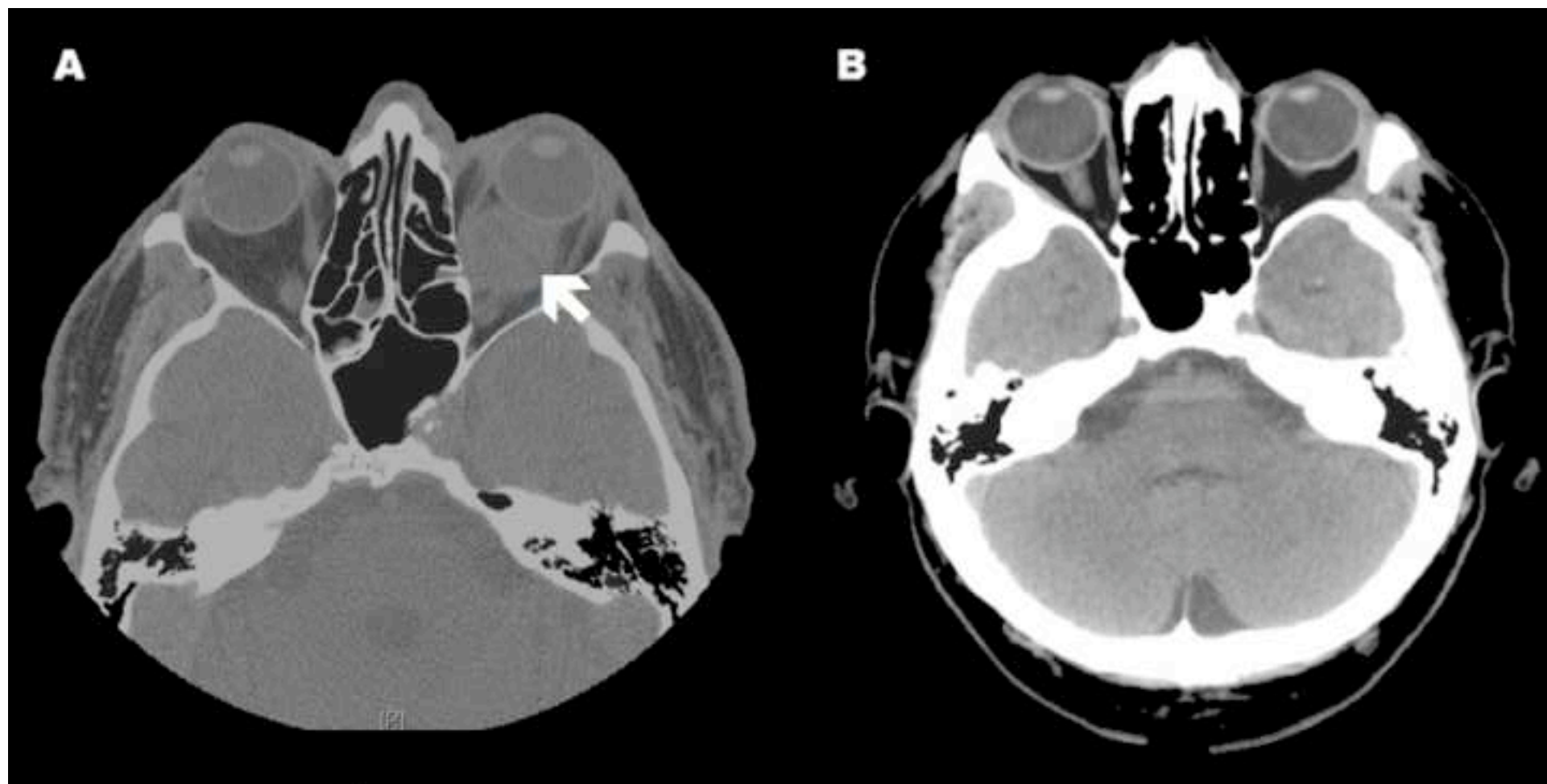


Figure2
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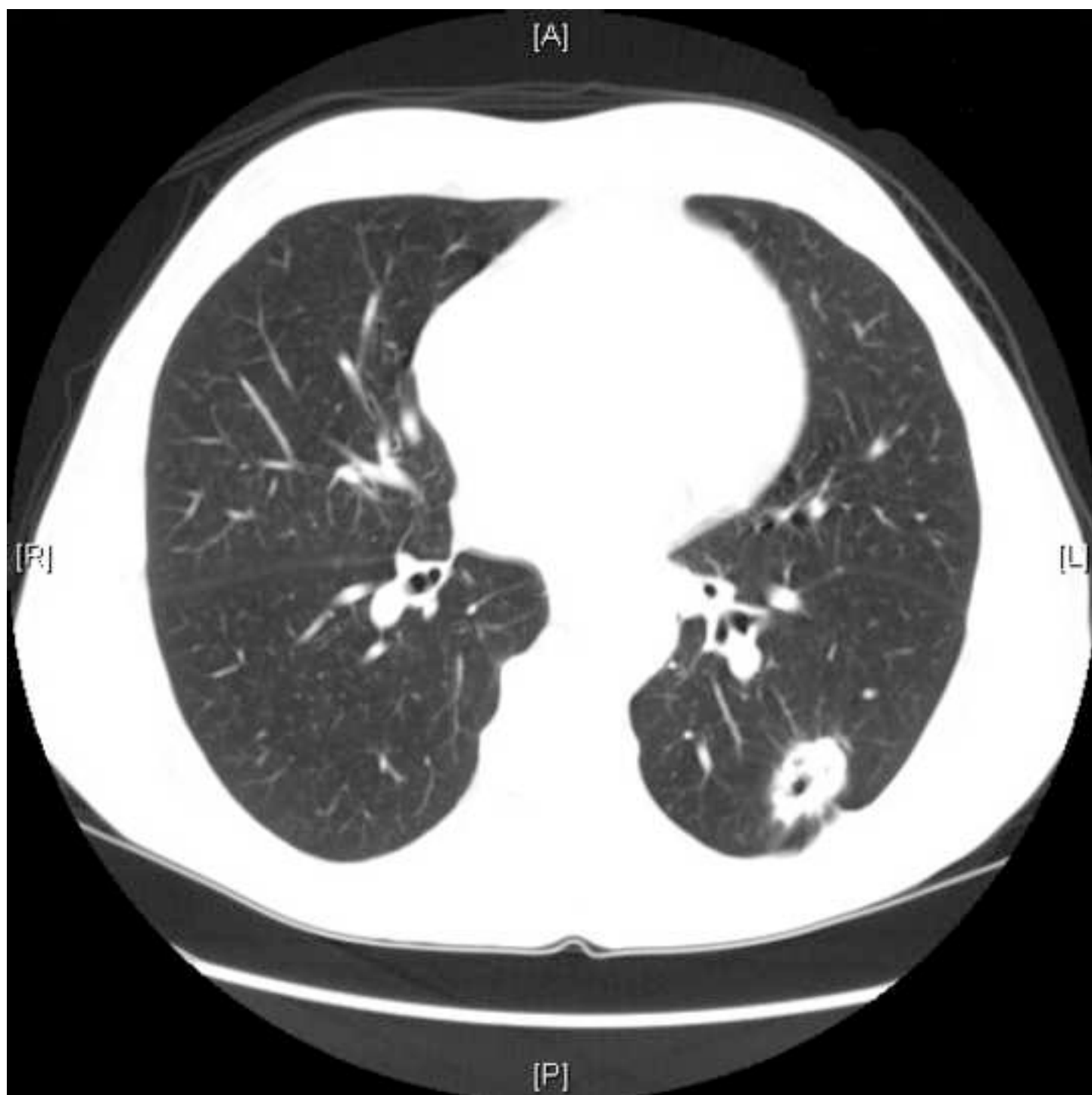


Figure3
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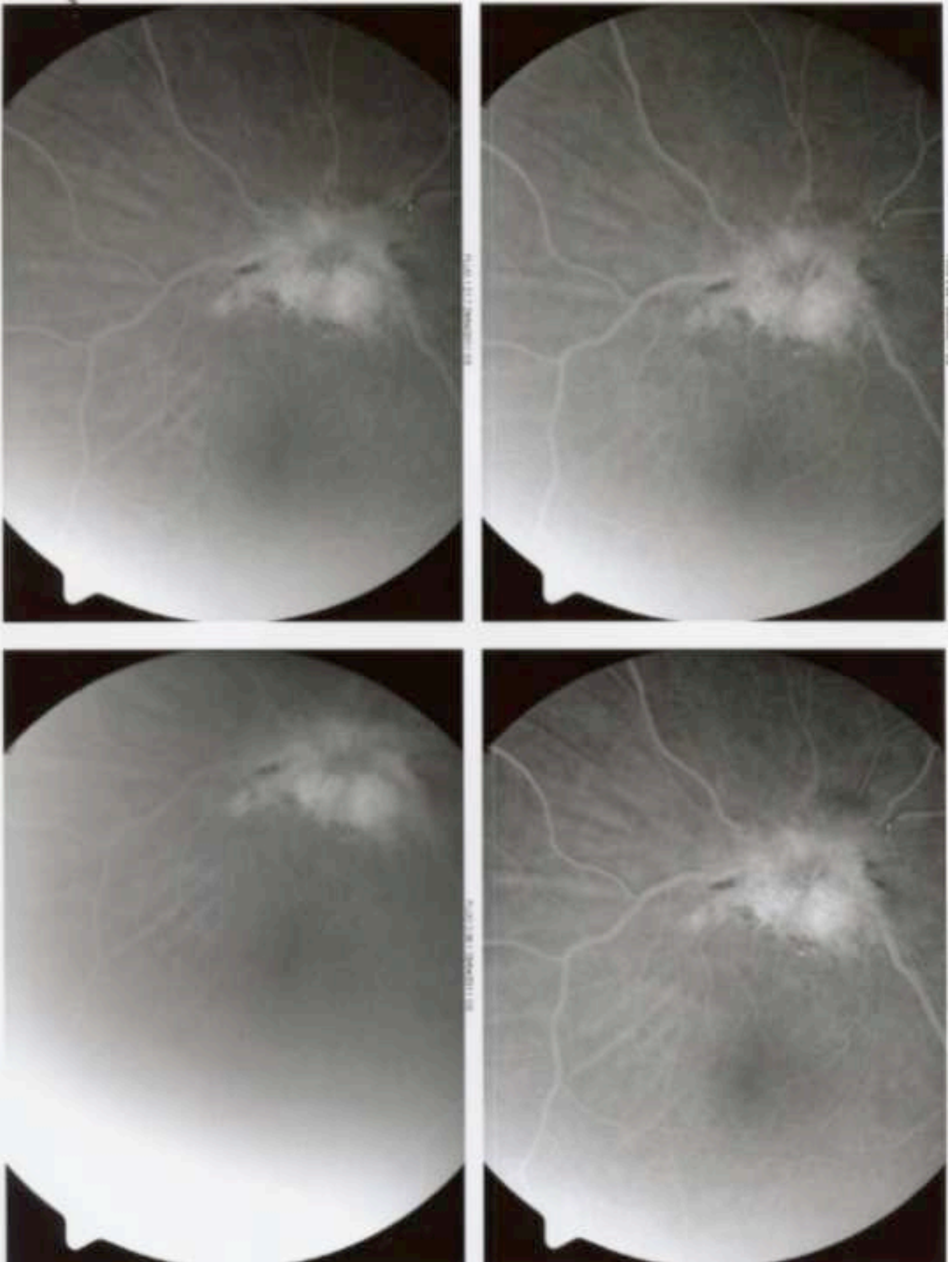


Figure4
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