# Retinal metastasis of carcinoid presenting with headache: a case representation

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## ABSTRACT

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Background: Headache is one of the most common somatic symptoms in patients who search emergency department (ER).
 Diagnosing and treating the most common headache disorders are not so difficult. Thus, recognizing some types of headaches,
 either primary or secondary, can be challenging.

8 Case Presentation: We present an interesting and challenging case of a patient who referred to the ER because of a benign 9 headache and proved to suffer from a metastatic tumor of the retina due to lung carcinoid.

Conclusion: Unusual headache syndromes do not appear to be as rare in clinical practice as has been generally believed. To our
 knowledge, this is the first time to report a metastatic carcinoid of retina presenting with isolated headache and redness of sclera
 as a primary symptoms. Appropriate identification of the secondary cause of a headache is the key to successful treatment.

13 **Keywords:** Headache, retinal metastasis, pain, eye, case report.

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## 18 Background

Headache is generally a common condition encountered 19 in the emergency department (ER), accounting for about 20 1% and 3% of all visits [1]. Although most patients with 21 headache admitted to the ER are due to benign conditions, 22 as many as 4%-10% of all headache cases are secondary 23 24 to other underlying pathological conditions [2]. The main aim for the ER physician is to rule out cerebrovascular dis-25 eases, subarachnoid hemorrhage, and meningitis as poten-26 tial causes of a headache [3]. Neuroimaging is indicated 27 in patients with red flag features for secondary headaches. 28 29 The majority of patients are usually discharged from the ER with an effective treatment of symptoms and appro-30 priate follow-up. Nevertheless, several studies report mis-31 diagnosis or underdiagnosis of headache conditions and 32 emphasize the importance of the neurologist in the ER for 33 the management of these patients. Herein, we report an 34 interesting and challenging case of a patient referred to 35 our ER of our hospital because of a benign headache and 36 proved suffering from a rare underlying disease. 37

## 38 Case Presentation

A 78-year-old non-smoker woman with a medical history of hypertension presented to our ER with a persistent
frontal headache that began 6 days earlier, located around
the right periorbital area and redness of the right sclera.
On the first day of headache, the patient experienced 3
hours' episode of transient blurred vision from the right
field. The headache was of moderate to severe intensity

with no boring, burning, jabbing, or throbbing character. It
had no relation to coughing, straining, or posture change.
No diurnal variation reported. She had no history of scalp
tenderness, jaw claudication, persistent fever, neck pain,
persistent nasal symptoms, or dental disease. No associated nausea reported, neither light nor noise sensitivity.

On physical examination, the patient was afebrile with 52 normal vital signs. There was no evidence of a post-trau-53 matic headache; temporomandibular joint (TMJ) condi-54 tion was intact. Her mental status and language function 55 were normal. Visual fields were intact and pupils reac-56 tive to light without anisocoria. Ocular movement, 57 such as cranial nerve examination, was otherwise unre-58 markable. Neurological examination according to the 59 National Institutes of Health Stroke Scale was normal 60 (0 points) [4]. 61

Laboratory testing inclusive of hemoglobin, erythrocyte sedimentation rate (ESR), and C-reactive protein was normal. 64

CT demonstrated a small rounded air bubble below the 65 eyelid and possibly a lateral slight thickening of the right 66 retina. (Figure 1). 67

MRI revealed a bending thickening located laterally of 68 the optic disk mildly hyperintense compared to vitreous, 69 homogeneous contrast deposition noticed at the T1-WI 70 with strongly hypointense at the T2-weighted images. 71 According to radiologists, findings were radiologically 72 consistent with intraocular melanoma. 73



**Figure 1.** CT demonstrated a small rounded air bubble below the eyelid and possibly a lateral slight thickening of the right retina.

Further investigation with ophthalmoscopy revealed macular degenerative changes and physiological excavation of the optic disk. A spool-shaped grayish tumor, measuring  $8.7 \times 7.2$  mm<sup>2</sup>, was also revealed temporarily from the macular area with max protrusion 3.2 mm. The finding was not macroscopically typical of malign melanoma.

Chest X-ray demonstrated a 21-22 mm hypodense, 80 81 lumbar nodule on the right lower lobe which provided radiologically suspicion of the tumor. A chest CT with 82 contrast revealed a lobular 23-24 mm tumor, within the 83 posterior segment of the right lower lobe. Moreover, a 1 84 cm large lymph node noticed within the lower right of the 85 hila in connection with the underlying bronchus and the 86 left thyroid lobe was relatively enlarged. 87

Fluorodeoxyglucose-positron emission tomography
(PET) scan demonstrated a suspect tumor/metastasis in
the right middle lobe and to the left of the abdomen, a

- 91 focal uptake in a seemingly wall-thickened sigma loop.
- 92 Ultrasound of the liver and abdomen was normal.

93 Colonoscopy and gastroscopy were normal.

Endobronchial ultrasound in combination with PET/
CT and with <sup>68</sup>Gallium-labeled somatostatin analogs and
finally, a retinal biopsy has shown that the patient suffered
from a carcinoid tumor with ocular retinal metastasis. The
patient was referred to the oncology department for further therapy.

## Discussion

The third edition of the International Classification of 101 Headache Disorders consists of almost 400 headache types 102 and subtypes [5]. Diagnosing and treating the most com-103 mon headache disorders are not so difficult but recognizing 104 unusual types of headache, either primary or secondary, 105 may be challenging for many physicians [6]. Atypical head-106 ache syndromes do not appear to be as rare in clinical prac-107 tice as has been generally believed [7]. The etiology of most 108 headaches can be elucidated by careful history and exami-109 nation [8]. In our case, there was no evidence in the natural 110 history which could be explained by an eyestrain headache, 111 migraine, tension-type headache, or other primary head-112 ache disorder. The normal ESR and a normal TMJ-status 113 ruled out temporalis arteritis and TMJ headache. The blood 114 pressure monitoring showed a maximum of the systolic 115 level to 150 mm Hg, and in combination with the clinical 116 symptoms, a debut of a hypertension headache was unlike. 117 The lateralized character of the headache in combination 118 with the periorbital manifestation and the undoubted help 119 of radiological investigation led to identifying the cause of 120 the problem. With complement imaging of orbital MRI was 121 verified the ocular tumor diagnosis. MRI transcended CT 122 in tumor detection, demonstrating 100% of tumors studied, 123 compared with 88% seen with CT [9]. 124

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Intraocular metastases are relatively uncommon and 125 typically present with ptosis, proptosis, pain or headache, 126 diplopia, decreased vision, or red eye pressure effects 127 [10]. Retinal metastases represent less than 1% of intraoc-128 ular metastatic cases [11]. Only 29 cases of metastatic dis-129 ease to the retina have been reported in the literature and 130 cutaneous melanoma was the most common malignancy 131 to demonstrate retinal metastasis [11–13]. 132

In our case, the patient suffered from retinal metasta-133 sis because of primary lung carcinoid. To the best of our 134 knowledge, this is the first time to report a retinal metas-135 tasis of such a tumor. The diagnosis of a metastatic lesion 136 in the eye can be challenging, especially when the patient 137 searches with a headache as a primary symptom. This case 138 highlights the difficulties in the assessing one of the most 139 common presenting symptoms in general practice, neurol-140 ogy and emergency clinics and underlies the importance 141 of neuroimaging in cases where symptoms persist and 142 other causes of headache are excluded. 143

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## List of abbreviations

C-reactive protein	148
Computed tomography	149
Emergency department	150
Erythrocyte sedimentation rate	151
	C-reactive protein Computed tomography Emergency department Erythrocyte sedimentation rate

- MRI 152 Magnetic resonance imaging
- PFT Positron emission tomography 153
- T1WI T1-weighted images 154
- TMJ Temporomandibular joint 155

#### **Consent for publication** 156

The author has the consent to publish this case from the patient 157 who is still in life. 158

#### **Ethical approval** 159

There is no need for ethics approval. 160

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218	Patient (gender, age)	1	Female, 78
219	Final diagnosis	2	Carcinoid tumor with ocular retinal metastasis
220	Symptoms	3	Headache and transient blurred vision
221	Medications	4	Oncological treatment
222	Clinical Procedure	5	Stabile
223	Specialty	6	Neurology-ophthalmology

#### Summary of the case 217