

## CASE REPORT

# Episodic migraine and chest pain as the first manifestation of small cell lung carcinoma

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## Abstract

Migraine-like associated with chest pain is an alarming association and forces us to rule out the presence of a secondary cause. That must be taken into account in the differential diagnosis of craniofacial hemicranial pain that appears in patients with no personal history of headache, and risk factors for the development of pulmonary neoplasia.

## KEYWORDS

chest pain, like migraine, migrainous corpalgia, thoracic migraine, vagal hemicrania

## 1 | INTRODUCTION

Chest pain and headache rarely occur together in the same patient; however, when these symptoms appear at the same time, we must suspect the presence of certain pathologies that require our preferential attention (cardiac headache, drugs, hypertension, subarachnoid hemorrhage, vasculitis, migraine, vagal headache, etc). Migraine is a common cause of consultation at the emergency department<sup>1</sup> and very frequently associates extra cephalic symptoms in the form of allodynia, although migraine corpalgia of exclusively abdominal and thoracic location may also be its only manifestation.<sup>2-4</sup> However, the presence of recent onset episodes of migraine-like associated with chest pain in a patient over 60 years of age is an alarming association and forces us to rule out the presence of a secondary cause.<sup>5</sup> In this article, we present the case of a 67-year-old patient with symptoms of an episodic migraine without aura of recent onset associated with chest pain as the first manifestation of a lung neoplasm.

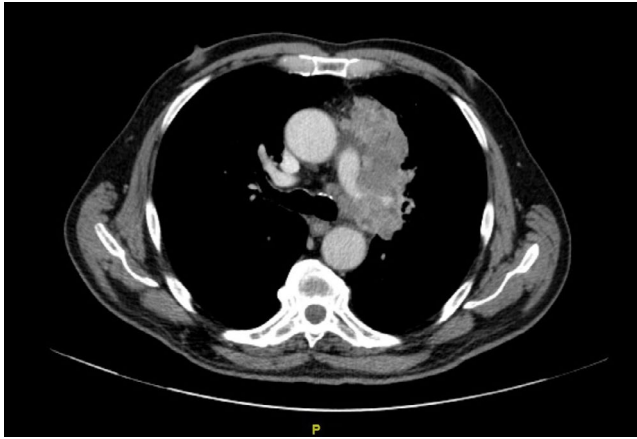
## 2 | CLINICAL CASE

A 67-year-old male, smoker (49 years/package), diabetic, and hypertriglyceridemia in treatment with oral antidiabetics and gemfibrozil. Bladder tumor operated on two occasions, with no other medical history of interest.

The patient comes to the hospital for presenting recurrent episodes of left hemicranial pain that are always associated with a sensation of pain and intrathoracic oppression. Episodes of oppressive headache appear during the day, always with the same characteristics, intensity, and duration. The pain lasts between 2 and 4 hours and is associated with nausea, sweating, and photophobia. Episodes of headache and chest pain occur spontaneously and are not triggered by physical exertion or Valsalva maneuvers. Also, pain improves with metamizole administration and rest. The patient has no history of headache or migraine, but associates in the last month the presence of constitutional syndrome with unquantified weight loss and aphonia.

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**FIGURE 1** Heterogeneous lobed mass paramediastinal left. In contact with aortic arch, descending aorta, primitive pulmonary artery, main bronchus, and upper lobar bronchus

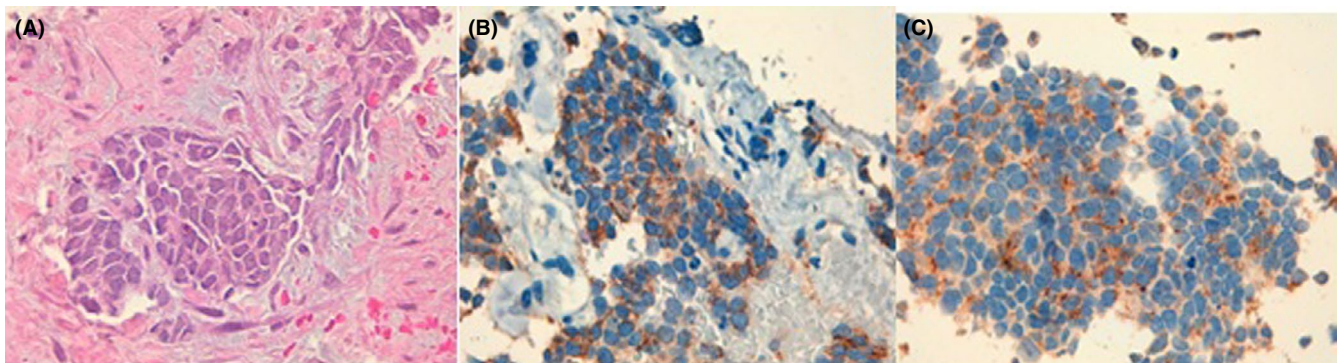
The physical and neurological exploration does not detect alterations. Blood analysis shows only a slight increase in glomerular sedimentation rate of 23 mm. A complete cardiological study is carried out, including an electrocardiogram, echocardiogram, and ergometry that do not detect alterations. Brain MRI and Willis polygon MRI show no significant findings. Due to his personal history, a smoker with a constitutional syndrome, a chest x-ray is performed, in which a left parahiliary mass is visualized, suggestive of a neoplastic process. The study was completed with a thoracic CT (Figure 1), abdomen, and pelvis showing the presence of a heterogeneous lobed left paramediastinal mass, which extends from the left anterosuperior mediastinum (inferior to the left brachiocephalic venous trunk) to include the aortic arch and descending aorta, left primitive pulmonary artery, anterior wall of the main bronchus and upper lobar bronchus. In addition, the presence of mediastinal adenopathies and nodules suggestive of hepatic and pulmonary metastases is observed. Subsequently, a thick

needle biopsy of mediastinal adenopathy is performed, with an anatomopathological diagnosis compatible with a small cell lung carcinoma (Figure 2).

### 3 | DISCUSSION

There are a few patients who show new migraine after the age of 60, so if a patient in this age group develops a migraine profile headache, we must conduct a systematic extension study to rule out underlying disease. The clinical case we present deals with a 67-year-old patient with hemicranial headache who meets diagnostic criteria for episodic migraine without aura, according to the International Classification of Headache,<sup>6</sup> and who associates episodes of chest pain as the first manifestations of a small cell lung carcinoma, which to date has not been reported in the literature.

Diseases affecting the thorax and abdominal viscera may rarely manifest themselves in the form of facial pain with a very diverse profile (persistent idiopathic facial pain, continuous hemicranias, facial neuralgia), but the presence of a migraine-like as the first manifestation of a pulmonary tumor has not been described in the literature to date. Eros et al<sup>7</sup> of the Mayo Clinic perform an exhaustive evaluation of the clinical features and underlying pathophysiology of a series of 31 cases published in the literature with facial pain secondary to the presence of a nonmetastatic lung tumor. As described by these authors, pain in 80% of cases is hemicranial and continuous profile (over the preauricular region), unlike the pain manifested by our patient who is migrainous characteristics and intermittent profile. They usually appear in smokers or ex-smokers, who are 70% of the cases show systemic symptoms suggestive of malignancy, such as weight loss and dysphonia, and in 77% of the cases, a nonspecific elevation of the glomerular sedimentation rate is detected, as it also occurs in our



**FIGURE 2** Mediastinal mass biopsy showed a fibrotic stroma infiltrated with clusters of neoplastic cells of medium to large size, oval and round form with hyperchromatic nucleus, fine granular chromatin, indistinct nucleoli and scanty granular cytoplasm. Nuclear molding, frequent mitotic figures with apoptotic debris were seen. Immunostaining showed positivity for CKAE1-3 and Chromogranin A. A, H/E, (B) CKEA1-3, (C) Chromogranin A

patient. The study by Eros JC et al indicates that the pain is strictly ipsilateral to the location of the lung lesion and the most frequently associated anatomopathological diagnosis is adenocarcinoma. Only in 10% of published cases is the presence of a small cell lung carcinoma associated, as in our patient. Unlike what happens in our patient, whose analgesic response to pain is good, this type of headache is usually resistant to analgesics and the definitive way to control pain is the surgical resection of the lung lesion, which affects the vagus nerve, however as occurs in many cases the diagnosis is made late, when a complete resection of the tumor is no longer possible, as it is an advanced evolutionary stage.<sup>7,8</sup>

The physiopathology of this type of headache is not very well known, although several authors have related it to the involvement of the vagus nerve, so it has also been called vagal headache.<sup>9,10</sup> Vagal headache is the pain referred to from the thorax to the head by the possible infiltration or compression of the vagus nerve by a lesion occupying space, typically pulmonary. The vagus nerve is a mixed nerve, which collects visceral afferents from the pharynx, larynx, thorax, and abdomen to the solitary nucleus in the spinal bulb, and on the other hand collects the somatic afferents of a part of the dura mater of the posterior fossa, tympanic membrane, and pharynx that converge in the spinal nucleus of the trigeminal. Our patient presents pain with migraine characteristics and the allodynic manifestations of patients with migraine, such as pain in the region of the thoracic wall, are due to central sensitization involving second-order neurons in the nucleus of the trigeminal mesencephalic, which receive convergent information from the meninges, scalp, face and third-order neurons in the thalamus, which in turn processes sensitive information from the whole body.<sup>2,7,9</sup> Therefore, the systems are connected, so that infiltration of the vagus nerve in the mediastinum can produce reflex pain at a distance and on the contrary, a migraine can produce extracephalic clinical manifestations.

## 4 | CONCLUSION

We present the clinical case of a 67-year-old patient with episodic migraine without aura that associates episodes of chest pain of recent onset, as the first manifestation of a small cell lung carcinoma. Migraine-like associated with chest pain or vagal hemicrania are very rare entities that must be taken into account in the differential diagnosis of craniofacial hemicranial pain that appears in middle-aged patients with no personal history of headache, smokers, and risk factors for the development of pulmonary neoplasia.

## CONFLICT OF INTEREST

None declared.

## AUTHOR CONTRIBUTIONS

ATG: Primary author; VMM: Correspondence author, analysis; AA: Anatomopathological analysis; IFP: Manuscript analysis; LHR: Manuscript analysis; SFI: Manuscript analysis; JMF: Manuscript Analysis.

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