

Case	(430) Angioinvasive pulmonary aspergillosis with cerebral affection: a case report
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## CASE PRESENTATION

A patient with a kidney transplant comes to the emergency department in the sixth month post-operative with febrile neutropenia.

First, chest X-ray showed a mass in middle field of the right lung, so a CT was performed. Lung mass had scalloped margins with a rounded liquid-attenuating centre, with a slightly surrounding ground glass opacity.

Chest CT also revealed bilateral multiple variable-sized ill-defined lung nodules, some of them with central cavitation.

The day after his admission, he reported a left-sided hemicranial headache linked to speech problems, so an urgent head CT was ordered.

A mainly hypodense area with a central hyperdensity was identified in the left hemisphere of cerebellum. In the adjacent parenchyma and in the frontal lobe, another two additional hypodense lesions were seen.

## DISCUSSION

Considering the clinical setting of severe neutropenia and the recent history of transplant, a fungal infection was suspected. Lung findings may be due to necrotic changes or even to incipient abscessification and the surrounding ground glass opacity correspond to the typical "halo sign".

Cranial lesions, although non-specific, may correspond to cerebral infarction, with associated haematoma in the one with hyperdense centre. With this findings, radiological diagnosis of angioinvasive aspergillosis was proposed.

The most distinct imaging characteristics at CT are multiple lesions with infarction or haemorrhage and the "halo sign", which is mainly seen in neutropenic patients and appears as a zone of low attenuation due to haemorrhage surrounding the pulmonary nodule.

Four types of pulmonary aspergillosis are known: aspergilloma, allergic bronchopulmonary aspergillosis, chronic necrotizing pulmonary aspergillosis, and invasive aspergillosis (referring either to angioinvasive or airway invasive form).

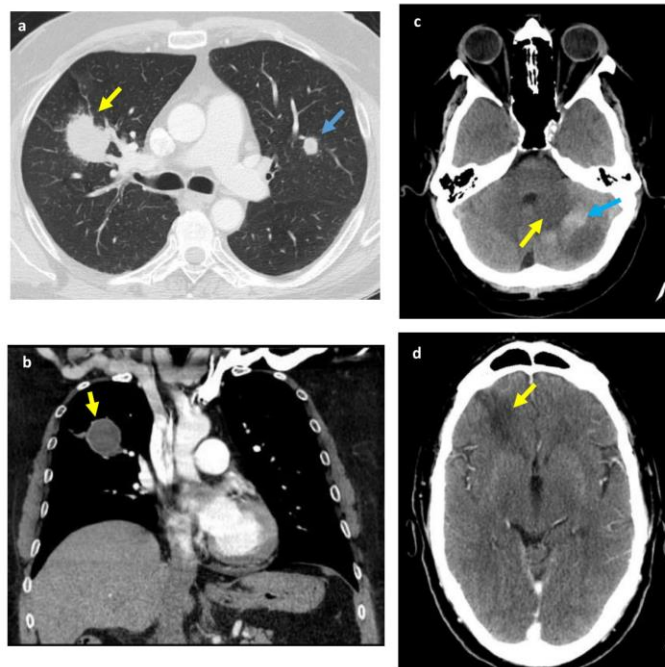
Invasive aspergillosis has a predilection for invasion of the walls of blood vessels, resulting in thrombosis and subsequent infarction and haemorrhage, and producing hematogenous spread to other locations. Serology test finally confirmed the radiological suspicion by detecting aspergillus antibodies.

## CONCLUSION

Angioinvasive aspergillosis is the most severe and aggressive form of aspergillosis. It occurs almost exclusively in immunocompromised patients with severe neutropenia, especially in the first 6 months post-transplant, showing systemic dissemination in 25-30 % of cases.

Clinical diagnosis is difficult, and mortality rate is high. Radiology plays a major role in its diagnosis.

Although imaging findings may be nonspecific, being familiar with spectrum of frequent radiologic findings, added to a suspicious clinical setting, may suggest the specific diagnosis of angioinvasive aspergillosis.



**a.** Axial chest CT (with lung window) where we can see the main lung mass (yellow arrow) that measures 58 x 40 mm. It is well defined and it has irregular margins. In addition, the blue arrow points out a contralateral nodule with similar characteristics. Notice how there is also a slightly surrounding ground glass opacity which correspond to the typical 'halo sign'.

**b.** A coronal chest CT reconstruction. The soft tissues window demonstrate that the mass has a hypodense centre, probably due to necrosis.

**c.** The axial cranial unenhanced CT shows that in the left hemisphere of the cerebellum there is a mainly hypodense lesion suggestive of cerebral infarction (yellow arrow). The blue arrow points out a hyperdense region in the centre of the lesion that correspond to an inner focus of haematoma.

**d.** An enhanced CT of a cranial slice demonstrate another hypodense lesion suggestive of infarction located in the frontal right lobe. This one has not got haemorrhagic component.

## **BIBLIOGRAPHY**

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