Intracerebral haemorrhage with a fluid–blood level

Diogo Mendes Pedro , Carlos Carrilho Anjo , Teresa Fonseca, António Pais de Lacerda

Serviço de Medicina III, Centro Hospitalar Universitário Lisboa Norte EPE, Lisboa, Portugal

Correspondence to

Dr Diogo Mendes Pedro; diogo.mpedro22@gmail.com

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DESCRIPTION

A man in his 80s with chronic lymphocytic leukaemia and permanent atrial fibrillation was admitted to our department with the diagnosis of community-acquired pneumonia. He was receiving rivaroxaban 10 mg and was shifted to enoxaparin (1 mg/kg two times per day) during hospitalisation. On the fourth day, he was found in coma (Glasgow Coma Scale score 8) with left-sided hemiplegia and hypotonia. Brain CT scan revealed a right temporal-insular hematoma (86.5×49.4 mm) with a fluid–blood level (figure 1). After careful consideration and discussion with the neurosurgery department, the risks for surgery were thought to outweigh the benefits. Undergoing medical therapy, the patient did not survive.

Lethal intracerebral haemorrhage is a possible complication of anticoagulation. A fluid–blood level seen in the brain CT scan represents the interface between the hypodense plasma and the hyperdense sedimented blood and is related to fibrinolysis or the inhibition of the formation of a clot.^{1 2} It often appears within 12–48 hours and has a moderate sensitivity and a high specificity for the presence of an impaired coagulation, most often due to the use of anticoagulation. Nevertheless, it has been associated with thrombolysis and bleeding disorders such as haematological diseases, tumours and arteriovenous malformations.^{1–3} This rare finding, when present, is often associated with large haemorrhage volumes, even though there seems to be no evidence of a worse outcome.⁴ The presence of a fluid–blood level can be useful when no history of anticoagulant use or coagulopathy is available, and should prompt a careful investigation since it

Learning points

- ▶ An intracerebral haemorrhage presenting with a fluid–blood level has a high specificity for coagulation disorders, especially the use of anticoagulation.
- ▶ Although rare, the presence of a fluid–blood level is often associated with a large haemorrhage volume.
- ▶ The presence of a fluid–blood level when no history of anticoagulant use or coagulopathy is available should prompt a careful investigation since it can have a direct impact on treatment and prognosis.

can have a direct impact on treatment. Indeed, the implementation of swift acute care interventions in the setting of intracerebral haemorrhage, including rapid anticoagulant reversal, can reduce mortality from this devastating disease.⁵

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ORCID iDs

Diogo Mendes Pedro <http://orcid.org/0000-0002-4923-2940>

Carlos Carrilho Anjo <http://orcid.org/0000-0002-8310-9612>

REFERENCES

- 1 Ismail II. Blood-Fluid level: a sign of oral anticoagulant-associated intracerebral hemorrhage in a patient with ischemic stroke. *J Neurol Disord* 2015;03:111.
- 2 Mittal MK, Burkholder DB, Wijidicks EF. Blood-fluid level on computed tomography head: a sign of warfarin-associated intraparenchymal hemorrhage. *Am J Emerg Med* 2012;30:2079.e1–2.
- 3 Macellari F, Paciaroni M, Agnelli G, et al. Neuroimaging in intracerebral hemorrhage. *Stroke* 2014;45:903–8.
- 4 Almarzouki A, Wilson D, Ambler G, et al. Sensitivity and specificity of blood-fluid levels for oral anticoagulant-associated intracerebral hemorrhage. *Sci Rep* 2020;10:15529.
- 5 Parry-Jones AR, Sammut-Powell C, Paroutoglou K, et al. An intracerebral hemorrhage care bundle is associated with lower case fatality. *Ann Neurol* 2019;86:495–503.

Figure 1 CT scan showing an intracerebral haemorrhage in the transverse plane (A) and sagittal plane (B). Arrows indicate intracerebral haemorrhage; A shows the fluid–blood level; 1 denotes hyperdense sediment.

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