Case 15537

Eurorad

Intracranial haemorrhage in a patient with cerebral amyloid angiopathy

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Section: Neuroradiology
Area of Interest: Neuroradiology brain
Procedure: Diagnostic procedure
Imaging Technique: MR
Imaging Technique: CT
Special Focus: Haemorrhage Case Type: Clinical Cases
Authors: González-Huebra I, García Baizán A, Ezponda A, Calvo M, Malmierca P, Bartolomé P, Paternain A, Domínguez P
Patient: 78 years, male

Clinical History:

A 78-year-old normotensive male patient with temporal and spacial disorientation, unable to find known places and objects.
Imaging Findings:

- Admission unenhanced axial CT demonstrated an acute hemorrhage in the left parietal lobe.
- MRI showed diffuse white matter hyperintensity on T2-weighted and T2 FLAIR sequences probably related to diffuse small-vessel disease. Also, T2 FLAIR showed the left parietal lobe hemorrhage.
- Susceptibility weighted imaging (SWI) demonstrated the left parietal lobe haemorrhage but also multiple small focal regions of signal drop out ("black dot") consistent with chronic microhaemorrhages and also linear hypointensities due to superficial haemosiderin deposits (cortical superficial siderosis).
Discussion:

- The cerebral amyloid angiopathy (CAA) is an important cause of cerebrovascular disorders in elderly non-hypertensive patients. It is a condition characterised by deposits of beta-amyloid within small cerebral and leptomeningeal vessels. [1]

- The diagnosis is made following the Boston criteria which specify four different diagnostic categories: definite CAA, probable CAA with supporting pathologic evidence, probable CAA, and possible CAA, depending on a combination of clinical, imaging, and histologic data. A “definite” diagnosis of CAA is only made postmortem. In our institution we made the diagnosis of probable CAA. [2]

- Typical radiographic features include cerebral haemorrhage, microhaemorrhages seen with SWI sequences and ischaemic leukoencephalopathy seen on T2 and T2FLAIR sequences.
Cortical superficial siderosis may be seen in up to 60% of patients. [3, 4]

- Microhaemorraghes have a typical peripheral distributions, in comparison to hypertensive microangiopathy that shows a central pattern.

- Pathologic tissue obtained at haematoma evacuation was positive for CAA.

- In conclusion, microhaemorrhages may not be seen on CT. Magnetic resonance imaging (MRI), specially

susceptibility weighted imaging (SWI) sequences are the modality of choice to detect small cortical haemorrhages. SWI sequences requires only a few minutes and should be included in routine neuroimaging protocols.
Differential Diagnosis List: Cerebral amyloid angiopathy., Hypertensive microangiopathy., Multiple cavernoma syndrome.

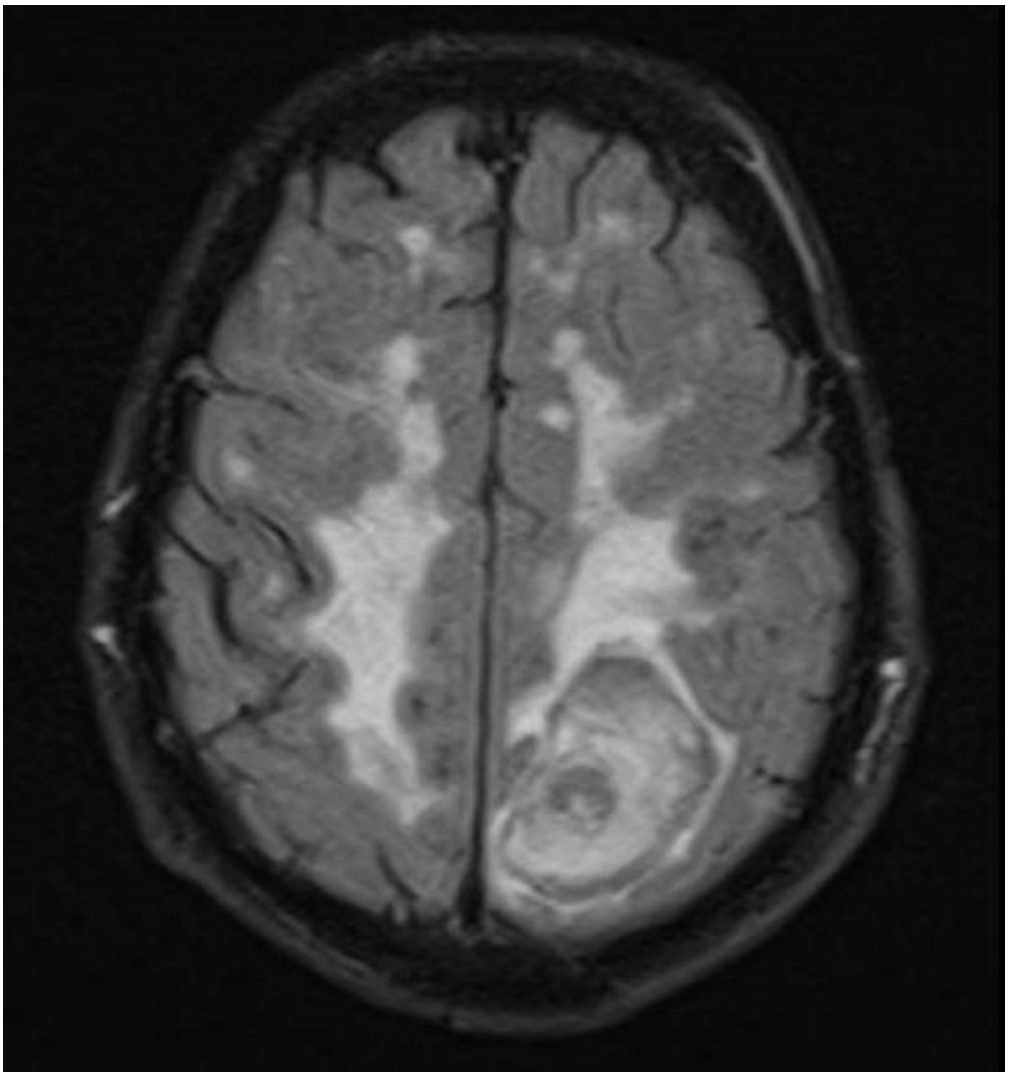
Final Diagnosis: Cerebral amyloid angiopathy.

References:

Vinters HV (1987) Cerebral amyloid angiopathy: a critical review. Stroke 18:311–324. (PMID: 3551211)
Knudsen KA, Rosand J, Karluk D, Greenberg SM. (2001) Clinical diagnosis of cerebral amyloid angiopathy: validation of the Boston Criteria. Neurology 56:537–539 (PMID: 11222803)
Chao CP, Kotsenas Al, Broderick DF. (2006) Cerebral Amyloid Angiopathy: CT and MR Imaging Findings. RadioGraphics 26: 1517-1531 (PMID: 16973779)
Haacke EM, DelProposto ZS, Chaturvedi S, Shegal V, Tenzer M, Neelavalli J, Kido D (2007) Imaging cerebral amyloid angiopathy with susceptibility-weighted imaging. AJNR Am J Neuroradiol Feb;28(2):316-7. (PMID: 17297004)

Figure 1

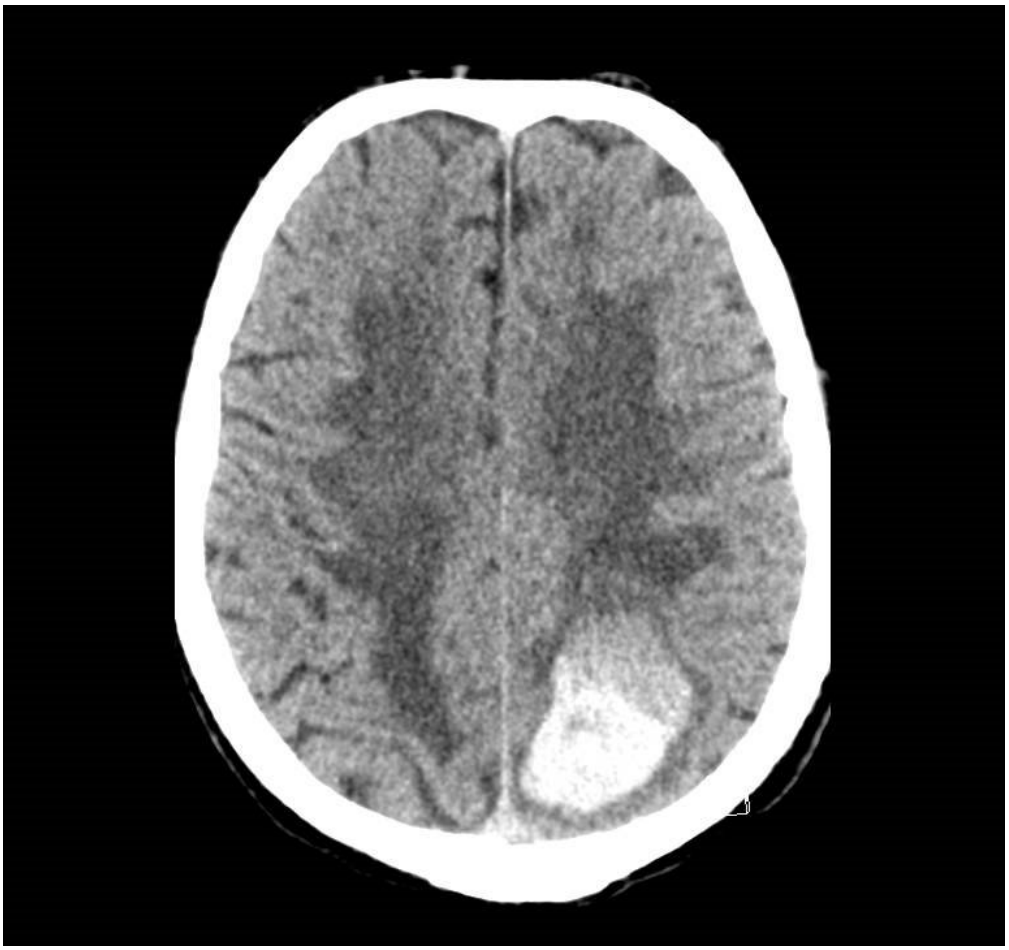
a



Description: T2 FLAIR shows a left parietal lobe haemorrhage and periventricular white matter hyperintensity (leukoencephalophathy). **Origin:** Clínica Universidad de Navarra, Pamplona, Spain

Figure 2

a



Description: Axial unenhanced CT scan shows a left parietal lobe intracranial haemorrhage. **Origin:** Clínica Universidad de Navarra, Pamplona, Spain

Figure 3

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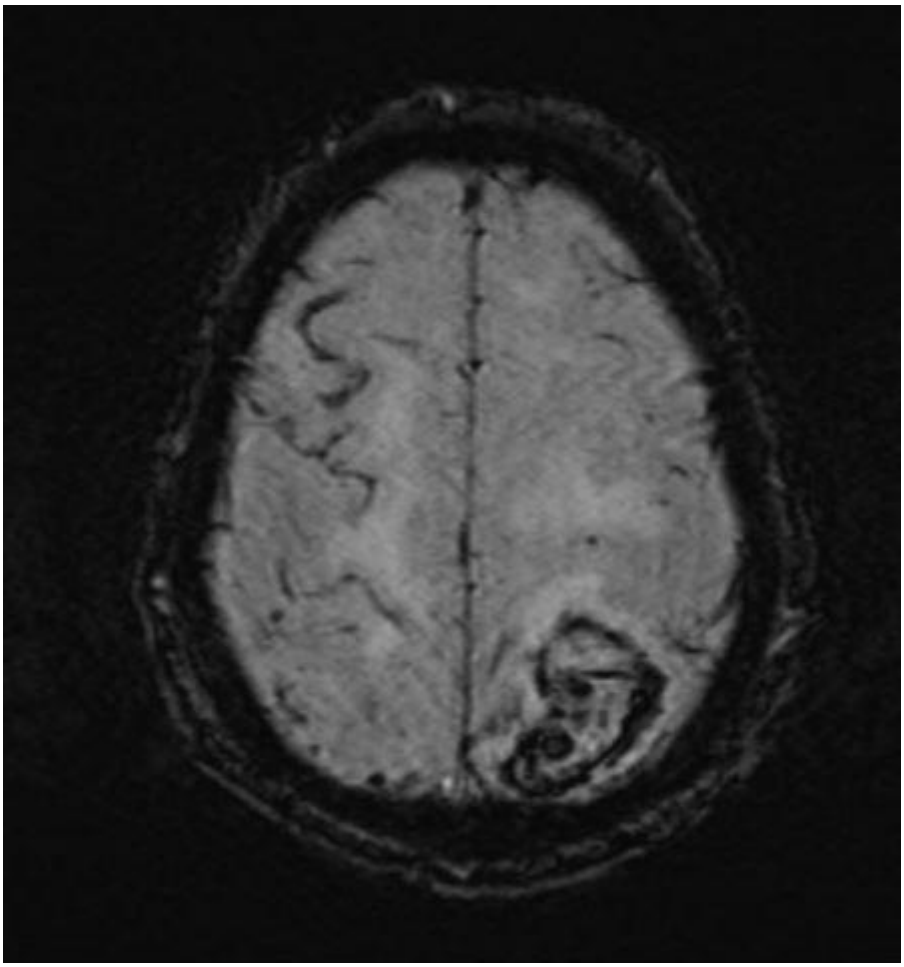

Description: Susceptibility-weighted imaging (SWI) confirms a left parietal lobe haemorrhage in a patient with small focal regions of signal drop out. **Origin:** Clínica Universidad de Navarra, Pamplona, Spain

Figure 4

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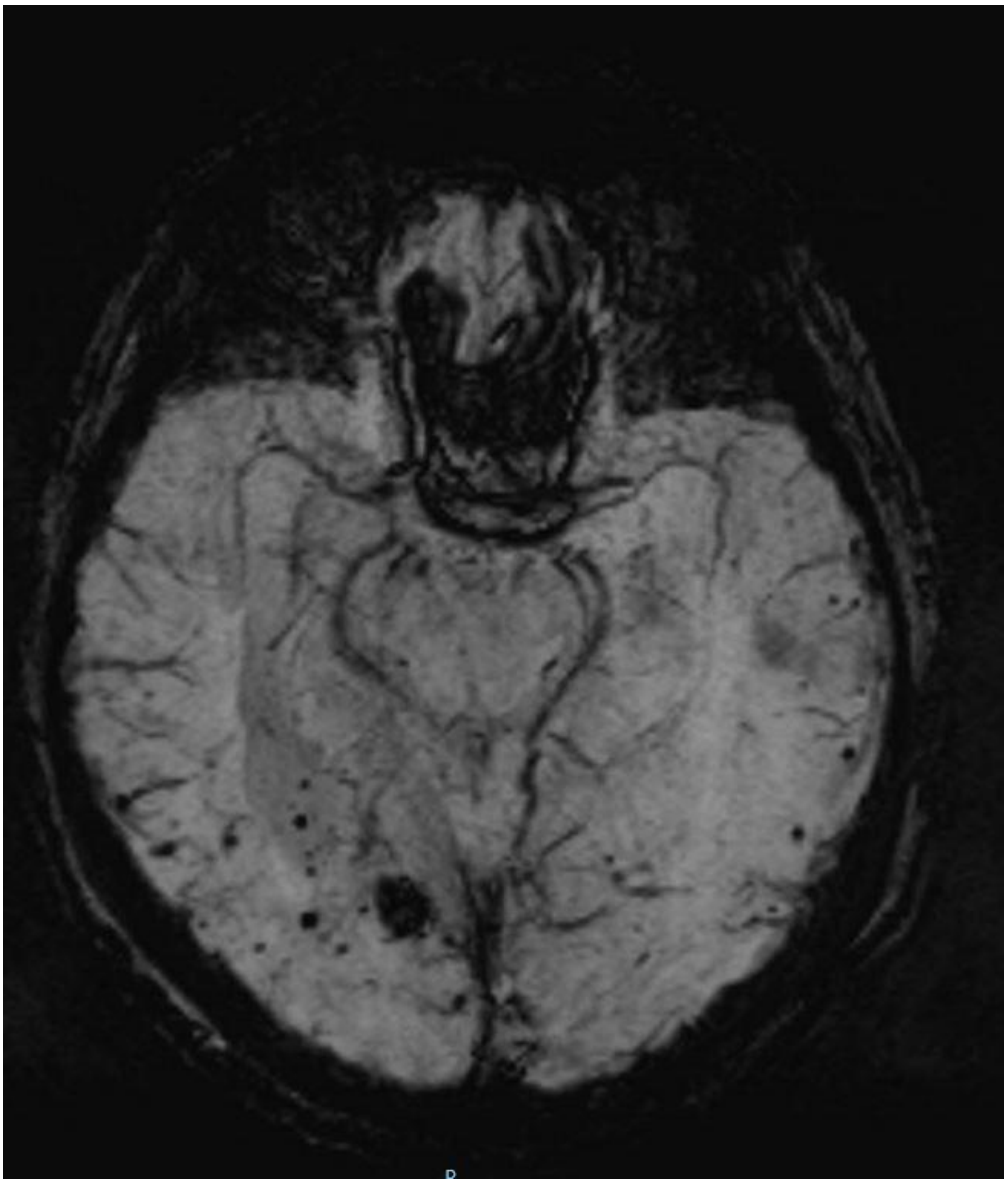

Description: Susceptibility weighted imaging (SWI) shows multiple small focal regions of signal drop out. **Origin:** Clínica Universidad de Navarra, Pamplona, Spain