Rupture of an aneurysm during three-dimensional computerized tomography angiography

Case illustration

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This 55-year-old man who presented at another institution with a temporary loss of consciousness and a left-sided hemiparesis was referred to our hospital. An admission computerized tomography (CT) scan (Fig. 1 left) demonstrated diffuse subarachnoid hemorrhage (SAH). To detect the causative lesion, three-dimensional CT angiography (3D CTA) was performed following the CT scan. The patient became comatose immediately after the 3D CTA examination. Results of subsequent CT studies revealed extravasation of the contrast medium into the suprasellar cistern and exaggeration of the subarachnoid clot (Fig. 1 right). Images reconstructed from the 3D CTA study revealed an anterior communicating artery aneurysm (ACoA) from which the contrast medium was spouting (Fig. 2). We are certain that the rerupture occurred while the patient was undergoing 3D CTA, because the density of the contrast medium in the subarachnoid space was as intense as that within the vessels. Unfortunately, the patient did not recover and died on the 9th hospital day.

Rebleeding of a ruptured intracranial aneurysm in the acute stage (within 6 hours of the initial rupture) occurs in almost 10.9 to 15.3% of SAHs and the outcome is very poor.1,4 Although cerebral angiography is essential for the detection of a ruptured aneurysm, it should be avoided in the acute stage because of the high rate of reperfusion and its accompanying high mortality rate.2 With the increasing availability of 3D CTA and experience in its interpretation, this imaging method is becoming widely established as the examination of choice for many neurosurgical disorders. Recently, 3D CTA has been shown to be useful in detecting ruptured aneurysms.3 However, there have been no published studies in which the correlation between 3D CTA performed in the acute stage and reperfusion of the aneurysm have been discussed. This is the first documented case in which reperfusion of an aneurysm occurred during 3D CTA performed in the acute stage and in which the rupturing aneurysm was detected during the 3D CTA study.

References