Hemorrhagic transformation from ischemic perforating arteries around microbleed following winning rt-PA thrombolysis in the basilar branch atheromatous disease.

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INTRODUCTION: Asymptomatic cerebral microbleed is never contraindication for rt-PA thrombolysis of ischemic stroke. A case of successful thrombolysis for minor stroke within 3 hours after onset succumbed to 6-hour-delayed massive hemorrhagic transformation from microbleeds around the ischemic lesion.

CASE: A 62-year-old male was transfer to our center 2 hours after sudden attacks of gait disturbance and slurred speech. Neurological examination showed dysarthria, left ataxic hemiparesis, and disturbance of consciousness accompanied by gaze suppression to the right, that reached NIHSS score 7. His medical history consisted of diabetic nephropathy, hypertension with no antithrombotic medication and stroke. CT showed no early ischemic sign (Fig. 1). Thrombolysis with intravenous rt-PA started from 45 minutes of door-to-needle duration enough to achieve complete shrinking neurological deficits for initial 30 minutes during the injection, when DWI detected a ventral-to-dorsal wedge signal in the mid-pons with neither detectable FLAIR high signal nor the adjacent constricted/occluded or aneurysmal vertebro-basilar arteries, just after rt-PA execution (Fig. 2). We also noted a lot of 1-mm or less diameter of T2*-positive microbleeds that were overlapped by the DWI positive infarcts. While his blood pressure had been kept in 160-170/70-90 mmHg after successful rt-PA. He suddenly complained of thunderclap headache with recurred left hemiparesis with right ophthalmoplegia 3 hours after thrombolysis execution. CT demonstrated 2-cm-diameter pontine hemorrhage centering in the microbleed (Fig. 3). The hematoma expanded into the midbrain and the forth ventricle with developing coma and tetraplegia subsequently.

COMMENTS: Because cerebral microbleed represents hemorrhage-prone microangiopathy, fibrinolytic and effective rt-PA jeopardized hemorrhagic transformation out of an occluded perforator vulnerable to reperfusion injury even in the minor stroke with branch atheromatous disease, suggested by Fig. 4.

Fig. 1. CT on the admission.

Fig. 2. MRI after rt-PA.

Fig. 3. CT 3 hours after rt-PA.

Fig. 4. Hematoma, acute infarct, microbleeds.

Cerebral microbleeds have been established as an independent predictor of cerebral bleeding. There are contradictory data regarding the potential association of cerebral microbleeds burden with the risk of symptomatic intracerebral hemorrhage in patients with acute ischemic stroke treated with intravenous thrombolysis¹.

Reference: 1. Tsivgoulis G et al. *JAMA Neurol* 2016;73:675-683.

COI: none.