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Pseudo-subarachnoid hemorrhage demonstrated by T2*-weighted gradient echo MRI

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A 56-year-old man with multiple liver abscesses was referred to the neurology department for comatose state with brainstem dysfunction. Non-contrast brain CT showed diffuse cerebral edema with subarachnoid hemorrhage (SAH)-like appearance (Fig. 1A). A lumbar puncture was not carried out because of the brain edema which was revealed in CT examination. T2*-weighted gradient-echo MRI revealed enlarged subarachnoid vessels that were not consistent with true SAH (Fig. 1B). Final diagnosis was septic encephalopathy with pseudo-SAH. Pseudo-SAH has been reported in association with cerebral edema, bacterial meningitis, subdural hematoma, venous sinus thrombosis and spontaneous intracranial hypotension (1, 2). The presence of pseudo-SAH in diffuse cerebral edema is believed to be due to venous congestion and distention (1, 2). Venous congestion can increase the amount of deoxyhemoglobin by decreasing blood flow. Therefore, gradient echo MRI may be helpful in distinguishing pseudo-SAH from true SAH.

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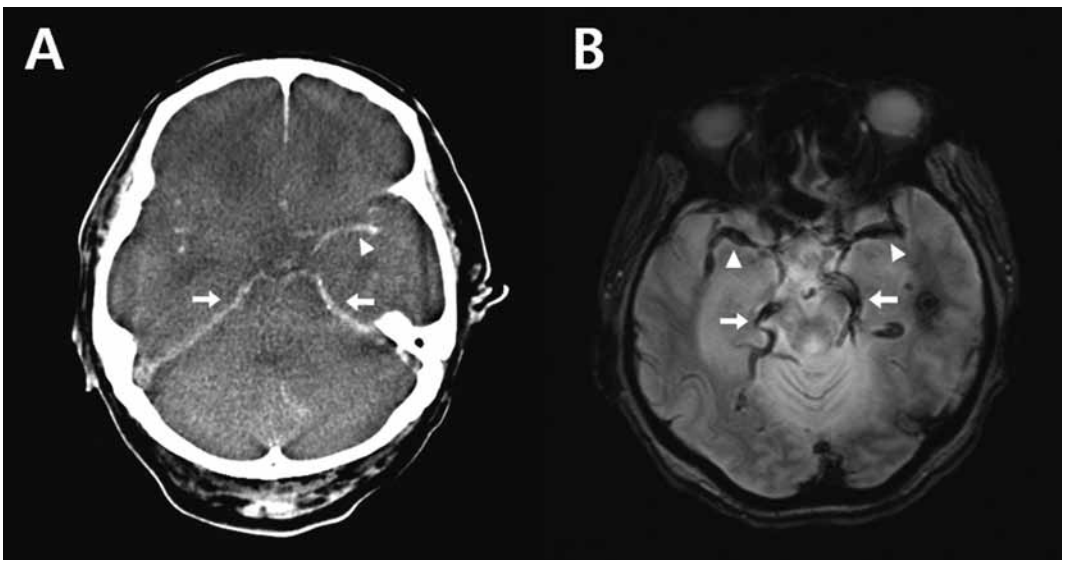

FIG. 1. — Non-contrast brain CT (A) and T2*-weighted gradient echo MRI (B).
Non-contrast brain CT shows increased attenuation along the tentorium cerebelli (arrows) and in the sylvian fissures (arrowhead), in addition to pronounced obliteration of basilar cisterns. Gradient-echo T2*-weighted image reveals hypointensity and enlargement of the superficial middle cerebral veins (arrowheads), basal veins of Rosenthal (arrows), and cortical veins.

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