

A case of cerebral infarction due to hypovolemic shock with massive blood loss

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Introduction

Cerebral infarction is usually classified as thrombotic, embolic or lacunar infarction according to pathophysiology. Hypovolemic shock usually causes decreased perfusion of the whole brain, which is hypoxic-ischemic brain injury, which denotes global exposure to and injury from hypoxia. We report a case of the cerebral infarction caused by hypovolemic shock due to massive blood loss after change of percutaneous endoscopic gastrostomy (PEG) tube.

Case report

A 58-year-old man with an old stroke had a PEG tube with severe dysphagia. Because of the long-term use of PEG tube, change of the PEG tube was needed. After change of PEG tube, massive hematemesis occurred. He lost consciousness, and his systolic blood pressure decreased to 40 mmHg and diastolic blood pressure decreased to 16 mmHg and hypovolemic shock occurred. PEG tube regurgitation was performed to confirm upper gastrointestinal (GI) bleeding and a large amount of bleeding was confirmed. Emergency upper GI endoscopy was performed and a large amount of blood was collected across the PEG site. Angiography was performed to stop continuous bleeding. In angiography, Lt. gastric artery bleeding was confirmed and embolization was done. Thereafter, vital was stabilized, and there was no active bleeding at the follow up endoscopy. However, he didn't regain consciousness and seizure occurred 3 days later. We suspected hypoxic-ischemic brain injury due to hypovolemic shock, and MRI was performed to confirm the hypoxic-ischemic brain injury. However, MRI showed recent cerebral infarction in right middle cerebral artery (MCA) and both anterior cerebral arteries (ACA) with cerebral edema. It also showed severe both internal carotid artery (ICA) stenosis. Ultrasonography was performed to discriminate the cardiac emboli, but no specific findings were observed. Since then, he had improved arousal by rehabilitation, but activities of daily living and cognitive function have been severely compromised compared to the previous state.

Conclusion

Hypovolemic shock is known to cause diffuse brain injury due to hypoperfusion and we define it as hypoxic-ischemic brain injury. Not all areas of the brain are equally susceptible to the injurious effects of hypoxia and hypoxia-ischemia. There is the brain area vulnerable to hypoxia, such as superior brainstem, cerebellum, white matter and subcortical structures supplied by the distal branches of deep and superficial penetrating blood vessels and watershed areas. Pathophysiologic processes occurring in hypoxic-ischemic brain injury also are characteristic of the ischemic stroke. However, in general,

hypoxia causes general damage to the brain and ischemic stroke is used to denote injury Resulting from focal or multifocal ischemia that occurring in one or a few specific vascular territories. In this case, we confirmed that hypovolemic shock could cause cerebral infarction due to hypoperfusion depending on the patient's vessel state.

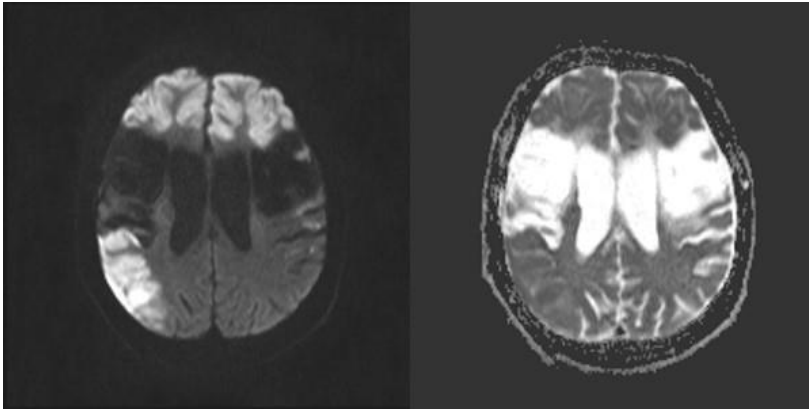


Fig. 1. Both ACA and Rt. MCA infarction with cerebral edema in brain MR



Fig. 2. Both ICA near occlusion in MR angiography

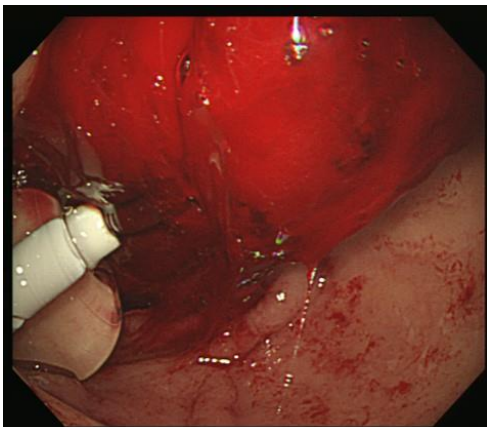


Fig. 3. Massive GI bleeding after PEG change