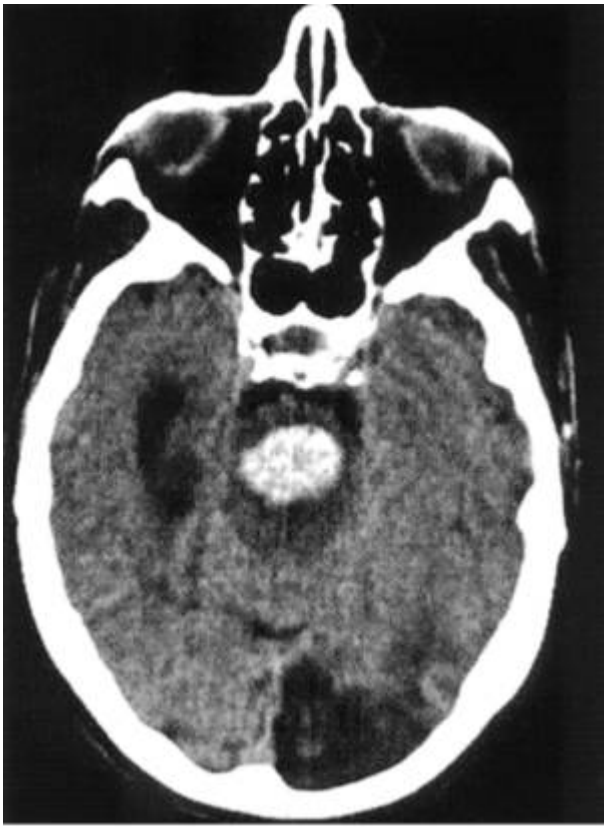
Pontine hemorrhage (PH)

Pontine hemorrhage, is a intracranial hemorrhage in the pons.



Epidemiology

Primary pontine hemorrhage (PPH) is rare, accounting for 5%-10% of intracranial hemorrhages [1)]

Etiology

Most commonly due to long standing poorly controlled chronic hypertension.

see Pontine cavernous malformation

Symptoms

The clinical symptoms of PPH include not only sensorimotor dysfunction but also dysphagia, oculomotor ab- normality (dilated pupil), and respiration failure, which often lead to serious complications [2)].

Score

Meguro et al proposed a Score [3)]

were a GCS score of 6 or less, absence of pupillary light reflex, and plasma glucose of 10 mmol/L or greater are independent mortality predictors of PPH. The PPH score is a simple and reliable clinical grading scale for predicting 30-day mortality.

Approaches

Midline suboccipital

Retrosigmoid approach

Lateral transpeduncular approach

Far-lateral transcondylar approach

Supracerebellar infratentorial approach

Transsylvian-transpeduncular approach

Outcome

The mortality rate is high, ranging from approximately 40%-70% [4) 5) 6) 7)].

Multivariate analysis showed that Glasgow Coma Scale score <9, hyperthermia (a core temperature of ≥39°C), maximum hematoma diameter more than 27 mm, and hematoma extension to midbrain and/or thalamus were significantly related to PH-related death [8)].

Functional recovery

Regarding functional recovery, the clinical parameters for a good outcome are considered to be an intact consciousness, good muscle power, and a normal pupil response [9) 10)].

Only a few studies have been analyzed using different parameters, such as the Glasgow Outcome Scale, activity of daily living, and modified Rankin Scale (mRS). In these studies, good recovery rates were considered to be 40.7%-63% using the Glasgow Outcome Scale [11) 12) 13)] and 54.5% using activity of daily living [14)].

Until now, clinical characteristics or radiological parameters, such as hematoma volume or transverse diameter measured using computerized tomography (CT), have been used to determine a predictive index of functional recovery in patients with PPH [15) 16) 17) 18) 19) 20)].

The combined motor evoked potentials (MEP) and somatosensory evoked potential (SEP), is a reliable and useful tool for functional recovery after primary PH [21)].

In 2010, Lee et al. [22)] reported for the first time that the assessment of the combined MEP and SEP after stroke provides a better prediction of functional recovery than do MEP or SEP alone, and also confirmes that EP sum for mRS and functional ambulation category (FAC) has higher explanatory power than do MEP or SEP alone.

Cognitive dysfunction

Cognitive dysfunction is not rare after pontine hemorrhage. Therefore, for patients with infratentorial lesions, it is necessary to perform detailed cognitive functional tests [23].

The combined MEP and SEP is a reliable and useful tool for functional recovery after PPH.

Case reports

A 34-year-old woman presented with a history of persisting headache for years, and a newly developed dizziness, left facial palsy and right hemiparesis two days prior to this admission. Initial computed tomographic angiography of the head demonstrated an area of increased density in the left middle and posterior fossae. Multiple aneurysmally dilated venous ectasias with contrast enhancement at the left pre-pontine cistern causing a massive mass effect to the brainstem were also noted, suggesting a huge vascular abnormality. Digital subtraction angiography revealed an abnormal vascular lesion surrounding the brainstem, which indicated a left direct carotid-cavernous fistula with posterior drainage. As her consciousness deteriorated the next day, a follow-up computed tomography scan was done which revealed a pontine hemorrhage. Subsequently, endovascular closure of the fistula with sacrifice of the left ICA was performed, which successfully eliminated the imaging abnormalities [24].

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