A rare case with a ruptured aneurysm of pericallosal artery and extensive hemorrhage located predominantly in the contralateral cerebral hemisphere, evaluated by computed tomography and angiography, was reported. The clinical, radiological and surgical findings of a ruptured aneurysm of pericallosal artery were analyzed. The variable CT patterns of ruptured aneurysms of anterior cerebral artery were discussed.

Key words: Ruptured aneurysm, pericallosal artery, contralateral cerebral hematoma

CASE PRESENTATION

History

A previously healthy 64-year-old woman suffered from acute onset of headache, vomiting, followed immediately by impairment of consciousness. Rapid progression to coma with irregular respiration was recognized. One hour after the acute episode, a computed tomographic scan followed by cerebral angiography were performed.

Examination

The neurologic examination revealed miotic pupils, increase motor tone in the lower extremities and bilateral Babinski signs. The electrocardiogram revealed prolonged QRS complex and deeply inverted symmetric T waves. Serum electrolytes were obtained and only hyponatremia was observed as significant abnormality.

The CT scan (Fig.1) showed an extensive, hyperdense lesion predominantly in the supracallosal and parasagittal region of left fronto-parietal lobes. Extension to the anterior interhemispheric fissure (Fig. 2a) and parasagittal region of right parietal lobe (Fig. 2b) was recognized.

The lateral (Fig. 3a) and oblique (Fig 3b) digital angiograms of right carotid artery revealed an about 1.1 x 0.3 cm in size, bilobulated aneurysm of right per-
icallosal artery projecting posteriorly.

The left carotid angiogram (Fig. 4a) revealed no evident vascular malformation on arterial and venous phase images.

**Surgical treatment of saccular aneurysm and outcome**

Emergent surgical intervention was performed. A saccular aneurysm with identifiable narrow neck at right pericallosal artery was visualized. Immediate surgical obliteration of the ruptured aneurysm was performed. The recovery was prompt and the postoperative course was free of delayed neurologic deficits, such as rerupture, hydrocephalus or cerebral vasospasm.

**DISCUSSION**

Ruptured aneurysms of the distal segments of the anterior cerebral arteries were exceptional. The majority was fed by the pericallosal or callosomarginal artery[1]. CT showed subarachnoid hemorrhage in more than 90% of cases.

The most subtle finding of a ruptured ACA aneurysm was blood in the pericallosal cistern and anterior interhemispheric fissure, pattern that may simulate the appearance of normal falx. The normal falx was not extended to the rostrum of corpus callosum (pericallosal cistern). An interhemispheric hyperdensity extending to the pericallosal cistern implied subarachnoid hemorrhage[2].

Blood in the cistern of lamina terminalis was the most frequent abnormality detected in ruptured aneurysm of anterior cerebral artery. Hematomas of septum pellucidum and corpus callosum were also detected in the majority of cases. Hematoma in the septum pellucidum appeared to be pathognomonic of aneurysms arising from the anterior communicating and anterior cerebral arteries but occurred in less than half of cases[3]. The mechanism of septal hemorrhage was described by Crompton[4], who examined 12 patients with septal hemorrhage, one of which had extended to corpus callosum. The blood ruptured through the thin roof of cistern of lamina terminalis into the potential space left by closure of cavum of the septum pellucidum. This route represented a pathway of low resistance and allowed the hematoma ruptured into the corpus callosum, which formed the roof of cavum. In hematomas of corpus callosum, the blood extended into the anterodorsal aspect of the corpus callosum and spreaded posteriorly along its dorsal border.

Blood in the caval-septal region was believed to
be characteristic of ruptured ACA aneurysms. This hematoma may ruptured into the ventricles or corpus callosum. A caval-septal hematoma was seen in 22% of ruptured ACA aneurysms. In 10% of these cases, the aneurysm ruptured directly into the ventricles. In 12%, blood was seen in basal cisterns. A caval-septal hematoma may suggest ruptured ACA aneurysms but may be seen infrequently with aneurysms in other locations or with vascular malformation[5].

Rupture of an anterior cerebral aneurysm may cause an intracerebral hematoma in the frontal lobe on one or both sides. Other potential causes of frontal lobe hematomas include arteriovenous malformation, hemorrhagic neoplasm, hypertensive hematoma, non-traumatic intracerebral bleeding and traumatic hemorrhagic contusion[5].

The suprachallosal pattern of hemorrhage was recognized less frequently in ruptured aneurysms of anterior cerebral artery. The suprachallosal hematoma has been attributed to hemorrhage into the calcarine sulci with subsequent intracerebral extension. The reports believed that they represented posterior intracallosal extension of hemorrhage into the genu. This suprachallosal pattern of hemorrhage produced two separate areas of hemorrhage within the centrum semiovale, as well as lateral and downward displacement of lateral ventricles[4]. Suprachallosal hemorrhage was not pathognomonic of ruptured anterior communicating and anterior cerebral aneurysms, it also occurred in subarachnoid hemorrhage from posterior cerebral artery aneurysms.

Variations of the A2-A4 circulation were common in terms of the degree of bihemispheric supply, which may be present from one cerebral artery. Using microsurgical techniques, bihemispheric supply can be found in up to 64% of hemispheres, with macroscopically evident bihemispheric supply in 12%[6]. An azygous ACA was a rare(0.3%) anomaly, in which one only A2 trunk was present. More commonly in situations of bihemispheric supply, one ACA will be dominant and a pericallosal branch of one cerebral artery will have bilateral supply in its distal aspect. This developmental variant of distal ACA may be associated with an increased propensity for aneurysmal formation, particularly at the bifurcation of pericallosal and callosomarginal arteries. This appeared to be especially so for true azygous ACA variant[7]. The above developmental variants were not observed in our angiographic study.

Our case was a rare reported one of ruptured
aneurysm of pericallosal artery, in which the blood was spreading to the contralateral supracallosal and parasagittal regions through the commissural fibers of corpus callosum.

REFERENCES

胼胝周圍動脈瘤破裂合併對側胼胝上血腫—病例報告

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本病例報告為一罕見胼胝周圍動脈瘤破裂合併對側胼胝上血腫。我們分析其臨床與放射線學表徵，並討論前腦動脈瘤破裂時各種腦斷層影像特徵。

關鍵詞：動脈瘤破裂，胼胝周圍動脈，對側腦血腫