CT appearances of haematomas in the corpus callosum in patients with subarachnoid haemorrhage

A. Jackson, J. B. Fitzgerald, R. W. J. Hartley, A. Leonard, J. Yates
Department of Neuroradiology, Manchester Royal Infirmary, Manchester, UK

Received: 1 September 1992

Abstract. Corpus callosum haematoma is a rare feature in subarachnoid haemorrhage (SAH), which may result from aneurysms of the anterior communicating artery (ACoA) or pericallosal artery (PCA). In 348 patients with aneurysmal SAH, bleeding from ACoA aneurysms in 88 cases produced no abnormality on CT in 7. Blood in the cistern of the lamina terminalis was the most frequent abnormality (76/88); haematomas of the septum pellucidum, confined to patients with ACoA aneurysms, were seen in 26 (30%). Rupture of PCA aneurysms in 12 patients gave rise to blood in the pericallosal cistern, anterior interhemispheric fissure and cistern of the lamina terminalis in 11. There was no blood in the septum pellucidum or the ventricular system in any case, but haematomas in the corpus callosum occurred in 8 (67%). In all of these, blood extended into the anterodorsal aspect of the callosum and spread posteriorly along its dorsal border. An identical, supracallosal pattern was seen in 2 patients (2.5%) with ACoA aneurysms, in whom haemorrhage was more extensive, with a large frontal lobe haematoma extending up from the cistern of the lamina terminalis in 1 and a haematoma of the septum pellucidum, with intraventricular extension in the other. In 8 patients (9%) with ACoA aneurysms a corpus callosum haematoma appeared to result from passage of blood up through the cistern of the lamina terminalis into the septum pellucidum and thence into the ventral aspect of the anterior corpus callosum; blood was present within the cistern, the septum and the ventricles.

Key words: Subarachnoid haemorrhage – Corpus callosum – Computed tomography – Cerebral haematoma

Haematomas in the corpus callosum are a recognised but unusual occurrence in subarachnoid haemorrhage (SAH), following bleeding from anterior communicating artery (ACoA) and pericallosal artery (PCA) aneurysms [1, 2], although CT demonstration of such a haematoma is often described a a specific indicator of PCA aneurysm rupture [3]. Haematomas may extend into the body of the corpus callosum or along its dorsal aspect [1, 4]. These supracallosal haematomas have been attributed by some workers to haemorrhage in to the calcarine sulci with consequent intracerebral extension [1, 4–6]; others believe they represent posterior, intracallosal, extension of haemorrhage into the genu [7]. We have therefore reviewed 348 cases of aneurysmal SAM in an attempt to clarify the mechanism and CT appearances of corpus callosum haemorrhage.

Methods

The investigations of 348 patients with proven aneurysmal SAH were retrospectively reviewed. All had SAH proven by lumbar puncture (LP) or CT and one or more arterial aneurysms demonstrated by angiography.

The CT studies were reviewed for evidence of blood within the corpus callosum. Since all identified such haematomas resulted from aneurysms arising from branches of the anterior cerebral artery, the CT studies on admission and angiograms of all these patients were reviewed in detail; the distribution of blood on CT was recorded and correlated with the site of the aneurysm demonstrated on angiography.

Confirmation of the site of the haematoma was available at surgery in 1 patient and at postmortem examination in a further 4.

Results

During the 54 months of the study 348 patients with aneurysmal SAH were investigated. Haematomas in the corpus callosum were demonstrated on CT in 17 patients, in all of whom the SAH originated from aneurysms of the anterior cerebral artery or its branches, as it did in a further 83 patients.

PCA aneurysms were the source of haemorrhage in 12 patients, in 1 of whom CT at presentation was normal al-
Fig. 1. a CT demonstrating a supracallosal haematoma following pericallosal artery (PCA) aneurysm rupture. Blood is also seen in the anterior interhemispheric fissure.
b Left internal carotid angiogram demonstrating an aneurysm at the origin of the PCA.
c Sagittal T1-weighted MRI (GE 490/14/90) demonstrating supracallosal spread of haematoma from the PCA aneurysm.

Fig. 2. CT demonstrating septum pellucidum and intraventricular haemorrhage in a patient with an anterior communicating artery (ACoA) aneurysm.

Fig. 3. CT demonstrating spread of blood from the septum pellucidum into the posterior part of the genu of the corpus callosum following bleeding from an ACoA aneurysm. Blood is also present in the third ventricle.

Fig. 4. a, b. CT in two patients following bleeding from ACoA aneurysms. Blood extends into the septum pellucidum, corpus callosum and frontal lobe, and is also present in the lateral ventricles.

Fig. 5. a Frontal lobe haematoma following bleed from ACoA aneurysm. Blood is also seen in the cistern of the lamina terminalis and anterior interhemispheric fissure.
b Supracallosal haematoma in same patient.

Fig. 6. Supracallosal haematoma following bleeding from ACoA aneurysm. Blood is also present in the septum pellucidum and ventricular system.