Clinical Characteristics of Subarachnoid Hemorrhage With or Without Headache

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Objective: Some patients report the absence of a typical headache at the onset of subarachnoid hemorrhage (SAH). We investigated the clinical backgrounds and characteristics of patients with SAH without headache and compared the findings with those of patients with SAH and headache. *Methods:* We examined 224 patients retrospectively who underwent intracranial aneurysmal clipping. Patient's characteristics, Fisher's computed tomography grade, situation at onset, site of ruptured aneurysm, and symptoms were compared. Subjects were categorized into two groups: headache group and nonheadache group. *Results:* Eighteen patients (8.0%) did not present with headache. There were no significant differences in terms of age, sex, Fisher's computed tomography grade, onset time, or site of ruptured aneurysm. *Conclusions:* The patients without headache have no specific clinical characteristics over patients with common SAH. **Key Words:** Headache—ruptured aneurysm—subarachnoid hemorrhage.

Subarachnoid hemorrhage (SAH) usually causes a sudden onset of severe headache. However, approximately 2% to 8% of patients with SAH do not experience a headache at onset,[1-3] and others report a gradually worsening headache.[3,4] Patients with SAH who do not experience a typical headache may be misdiagnosed as having a tension type headache, migraine, common cold, or viral meningitis.[4-8]

To reduce the risk of re-bleeding from a ruptured aneurysm or vasospasm-induced cerebral ischemia,[3,8-11] it is important to recognize and confirm the diagnosis of SAH as early as possible. Misdiagnosis at the first medical examination has been correlated with an increased risk of re-bleeding, symptom deterioration, and poor outcome.[7,8,12] However, making a correct diagnosis of SAH-without the typical symptoms, especially headache, is difficult.

The clinical characteristics of patients with SAH without headache have been poorly investigated.[13-16] Therefore, we evaluated the clinical backgrounds and characteristics of patients with SAH without headache and compared the findings with those of patients with SAH and headache.

Materials and Methods

Patients who were admitted to our hospital between January 1, 1990, and December 31, 1997, with SAH attributable to a ruptured intracranial saccular aneurysm and who underwent aneurysmal clipping were included in this study. All patients were given a diagnosis of SAH using head computed tomography (CT). The following procedures were used at our institute: (1) patients in neurologic grade I to III (classified according to Hunt and

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Received December 5, 2007; revision received March 12, 2008; accepted April 7, 2008.

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1052-3057/$—see front matter

doi:10.1016/j.jstrokecerebrovasdis.2008.04.009

Kosnik[17]) on admission underwent emergency surgery for aneurysmal clipping; (2) patients in neurologic grade IV and V underwent conservative therapy until their condition improved to grade I to III; (3) patients in grade IV and V with intracerebral hematoma contributing consciousness disturbance underwent emergency surgery for aneurysmal clipping and hematoma evacuation; and (4) patients older than 80 years or having poor predisease ADLs was bedridden or nearly bedridden.

We distributed questionnaires that included initial symptoms to the subjects by post in April 1998. The questionnaire detailed time, location, and behavior at onset; initial symptoms; existence of headache; state of headache at onset; and occurrence of symptoms other than headache. We included the patients who answered the questionnaires in this study, but excluded the patients who died, had high-grade unconsciousness, or lost their memory concerning onset at the time of investigation.

Clinical Characteristics

The clinical characteristics of the eligible patients were reviewed retrospectively according to their medical chart and questionnaires. We investigated the following clinical characteristics and the initial symptoms obtained from the questionnaire and medical records: age, sex, onset time (which was estimated in 4-hour increments at 12-4am, 4-8am, 8am-12pm, 12-16pm, 4-8pm, and 8pm-12am), Fisher's CT grade[18] on admission, site of ruptured aneurysm, location at onset (home, indoor except home, and outdoor), behavior at onset (normal activity and heavy activity), having headache or not, character of headache, and other symptoms. We defined sudden-onset and severe headache as typical, and a headache other than the typical headache, which was mainly a feeling of squeezing, as an atypical headache. The timing of initial symptom onset, which was the most crucial point in this study, was determined as the time when the patient initially felt strange before admission. Fisher's CT grade was determined by two neurosurgeons on admission. Brain angiography was performed to determine the site of the ruptured aneurysm.

Statistical Analysis

We categorized the patients with SAH into two groups. Patients with typical and atypical headache during their hospital days before intracranial aneurysmal clipping were included in the SAH with headache group. Typical headache is a sudden-onset, severe headache. Atypical headache is a gradual-onset, nonsevere headache, described as squeezing, throbbing, or similar to a cold. The nonheadache group consisted of patients who did not experience headache during the hospital days before intracranial aneurysmal clipping. Patients who did not report headache as their initial symptom were also classified into the headache group if they had severe headache after admission.

We compared the two groups statistically by age, sex, and head CT findings, and analyzed onset time, location, behavior, and site of ruptured aneurysm at onset. Comparisons were made using the Chi-square test, Fisher's exact test, Cramer's V:Fisher CT grade test, or Mann-Whitney *U* test when appropriate. We considered that *P* less than .05 was statistically significant. Software (StatView, Version 5.0, SAS Institute Inc, Cary, NC), was used for analyses.

Results

In all, 532 patients underwent intracranial aneurysmal clipping for ruptured aneurysms in our hospital between January 1, 1990, and December 31, 1997. We distributed questionnaires to all of these patients who were alive at discharge. According to our inclusion criteria, 224 patients (42.1%) were examined in this study (Fig 1).

Of the 160 subjects who reported headache at onset, 136 presented with sudden-onset severe headache and 24 presented with atypical headache. Of the 24 patients with atypical headache, 9 presented later with severe headache. Of the 160 subjects, the site of aneurysm was the internal carotid artery in 48, anterior cerebral artery in 58, middle cerebral artery in 49, and vertebral-basilar artery in 5. The Fisher's CT grade was 1 in 8 patients, 2 in 60 patients, 3 in 73 patients, 4 in 14 patients, and unknown in 5 patients.

A total of 46 subjects reported headache that occurred after admission. These subjects did not present with headache at onset, and presented subsequently with typical headache. Their initial symptoms included feeling sleepy, feeling cut at the cerebral artery, feeling something flowing in the occipital region of the head, feeling something bursting in the head, feeling a loss of consciousness, not feeling well, slight nausea, vertigo, and dizziness. The site of aneurysm in these patients was internal carotid artery in 16 patients, anterior cerebral artery in 14 patients, middle cerebral artery in 15 patients, and vertebral-basilar artery in 1 patient. The Fisher's CT grade was 1 in 0 patients, 2 in 13 patients, 3 in 29 patients, 4 in 3 patients, and unknown in 1 patient.

Therefore, 206 patients (92.0%) with headache from onset to operation were included in the headache group, and 18 patients (8.0%) without headache before operation were included in the nonheadache group.

Clinical Characteristics

Table 1 shows the clinical characteristics of the nonheadache group. In the nonheadache group, the mean age was 59.9 years, and 3 patients (16.7%) were male. Each patient showed various symptoms at onset, and most patients reported that their first symptom occurred during nonexertional daily activity. The median Fisher's