



H72 A Ruptured Infective Aneurysm Presenting as an Acute Subdural Hematoma: A Case of Sudden Death in a Drug Addict With Previously Undiagnosed Bacterial Endocarditis

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Learning Overview: After attending this presentation, attendees will recognize the risk factors for infective aneurysm, familiarize themselves with an unusual presentation of aneurysmal rupture, and recognize causes of non-traumatic subdural hemorrhage.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by increasing clinical suspicion of non-traumatic subdural hemorrhage and suggesting alternate diagnostic modalities beyond routine radiology, where indicated.

Acute Subdural Hematomas (SDHs) are most commonly caused by blunt impact trauma to the head. Non-traumatic (or “spontaneous”) SDH is a rare condition. Known causes of non-traumatic SDH include ruptured cerebral aneurysm. Such cases typically manifest as a combination of subdural and subarachnoid hemorrhage. Presentation of a ruptured aneurysm as an isolated subdural hematoma is exceptionally rare.

Here is reported the case of a 25-year-old female patient who died of a ruptured infective aneurysm that appeared as a pure SDH on clinical imaging. Her medical history included chronic intravenous drug abuse and infection with HIV and hepatitis C. She was discovered unresponsive and nude from the waist down inside a known drug house, was transported to a nearby hospital, and was subsequently transferred to a tertiary referral center. An initial urine drug screen was negative, and no significant traumatic injuries were noted on physical examination. A Computed Tomography (CT) scan of the head revealed a right-sided subdural hematoma measuring up to 1.8cm in thickness, with associated right-to-left midline shift of 1.5cm and herniation of the cingulate gyrus. Emergency craniectomy for evacuation was performed. She subsequently developed a high fever and blood cultures grew positive for Methicillin-Resistant *Staphylococcus aureus* (MRSA). Antibiotic coverage was initiated, and hospital workup revealed endocarditis. She followed a downward course and ultimately died on hospital day seven.

At autopsy, external examination showed a chronically ill-appearing female with no external injuries apart from scattered, small scabs and track marks. Internal examination confirmed the presence of bacterial endocarditis of the mitral valve with associated abscesses of the myocardium, spleen, and kidney. Neuropathological examination of the brain confirmed the presence of subdural hemorrhage and revealed a 2.7cm lesion of the right parieto-occipital cortex, with minimal associated subarachnoid hemorrhage. Microscopic examination of the lesion demonstrated features consistent with a ruptured infective aneurysm. Multiple smaller lesions consistent with septic emboli were identified elsewhere in the cortex, predominantly in the distribution of the right middle cerebral artery. Secondary neuropathological findings included cerebral edema, marked hypoxic-ischemic change, uncal herniation, and infarction of the midbrain.

Non-traumatic SDH is a relatively rare occurrence and has a high risk of mortality. Accurate diagnosis of the underlying cause is critical to effective medical decision making, and possible etiologies include aneurysmal rupture. A recent review of the literature identified no more than eight cases of pure acute SDH due to rupture of a cortical middle cerebral artery aneurysm, as seen in the present case.¹ The case presented here is remarkable in that the circumstances of discovery and initial clinical presentation were suggestive of a non-natural death, including the possibility of a blunt trauma homicide. Patients presenting with acute subdural hemorrhage with no clear etiology necessitate thorough clinical and radiographic evaluation to determine the cause of bleeding.

Reference(s):

- ¹ Awaji K., Inokuchi R., Ikeda R., Haisa T. Nontraumatic Pure Acute Subdural Hematoma Caused by a Ruptured Cortical Middle Cerebral Artery Aneurysm: Case Report and Literature Review. *NMC Case Rep J.* 2016;3(3):63-66.

Infective Aneurysm, Subdural Hematoma, Bacterial Endocarditis