

## Introduction

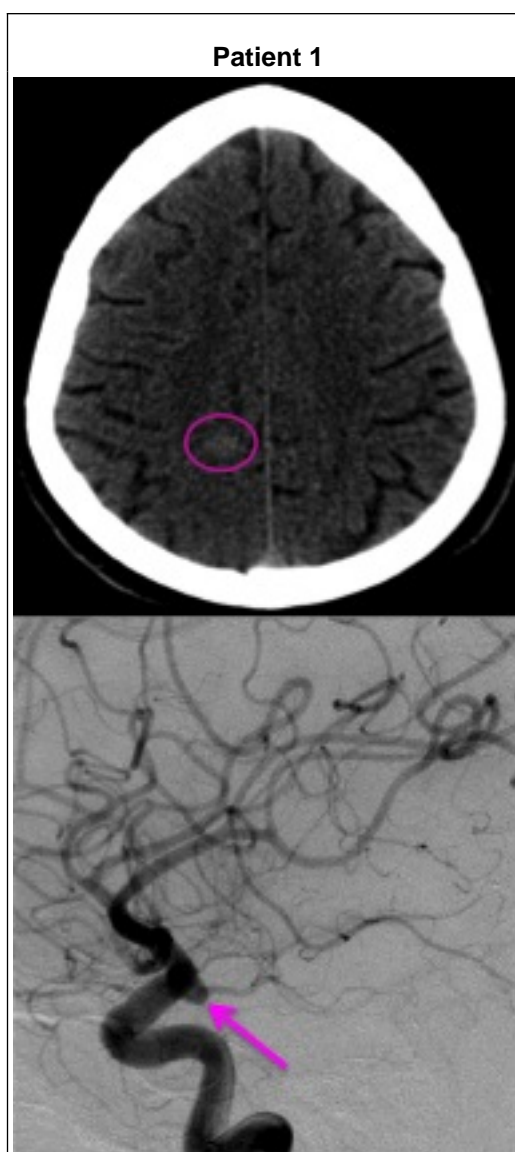
Most cases of spontaneous subarachnoid hemorrhage (SAH) result from a ruptured intracranial aneurysm. Other causes of SAH include vascular malformations, tumors, arterial dissections, and coagulopathies, while a small percentage of patients have cryptogenic SAH. The use of anticoagulants or the presence of coagulopathies has been shown to increase the risk of intracranial hemorrhage and have been associated with poorer outcomes in patients with subarachnoid hemorrhage. A diagnostic unique dilemma occurs when patients with SAH and coagulopathies are found to have an intracranial aneurysm.

## Methods

We describe the clinical course of three patients with spontaneous SAH in the setting of coagulopathies. A review of each patient's medical record and imaging studies was completed.

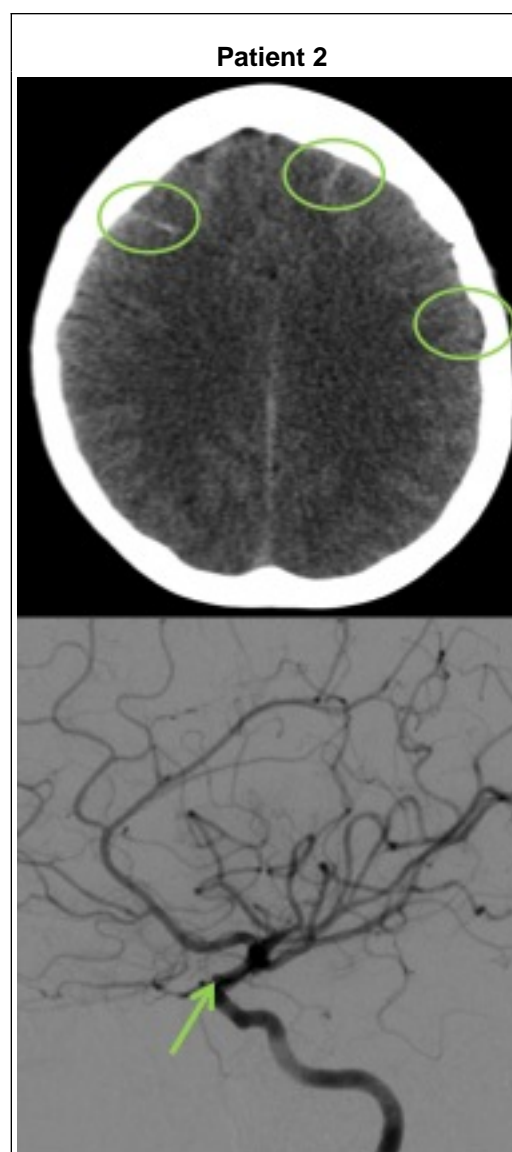
## Results

Three patients were identified. The first patient was on Warfarin for Factor V Leiden, the second patient had Hemophilia A, and the third patient was found to have early-stage myeloproliferative disorder/essential thrombocythemia. Coagulopathies were corrected in each patient. Workup revealed a small aneurysm in the first two patients that appeared to be remote from the focus of SAH. These patients underwent craniotomy and successful clipping of their



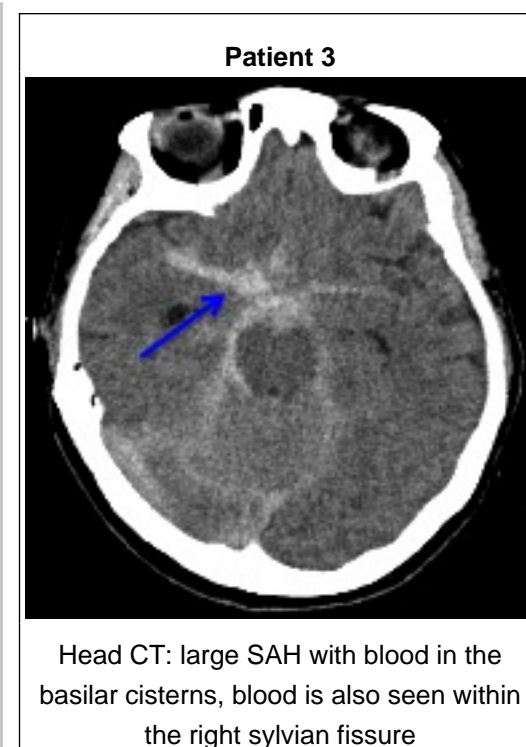
Head CT (left): moderately extensive SAH in the sulci of both cerebral hemispheres; Cerebral angiogram (right): superiorly and laterally projecting aneurysm at the origin of the left ophthalmic artery which measures 1.78 mm x 3.03 mm

aneurysms. Both aneurysms were unruptured on direct microsurgical inspection. The third patient underwent extensive workup,



Head CT (left): subtle SAH in the right post central sulcus; Cerebral angiogram (right): dome-shaped wide-neck saccular aneurysm on the ventral portion of the paraclinoid region measuring 2.8mm neck-to-dome with 3.7mm neck

and no aneurysm was identified. All patients had benign clinical courses with rapid resolution of the presenting symptoms.



Head CT: large SAH with blood in the basilar cisterns, blood is also seen within the right sylvian fissure

## Conclusions

Spontaneous SAH may be due to coagulopathy even if an aneurysm is discovered during the evaluation. The location of the aneurysm, the pattern of SAH on computed tomographic scans, and the clinical course are important to correlate in this patient population. In cases where there is sufficient doubt, the aneurysm should still be treated. If the clinical findings do not support an aneurysmal SAH, then treatment of the aneurysm is not necessary. The clinical suspicion and the risk of treatment must be balanced in these uncommon cases.