"Mid-term outcome of spontaneous subarachnoid hemorrhage with negative angiographic studies"

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Introduction

It is well known that rupture of an intracranial aneurysm constitutes the most common cause of spontaneous subarachnoid hemorrhage (sSAH). However, in approximately 20% of patients suffering sSAH, no aneurysm or other vascular pathology can be detected, despite their proper imaging workup. In our current communication, we present our preliminary results regarding the mid-term outcome of patients with angiographically negative sSAH.

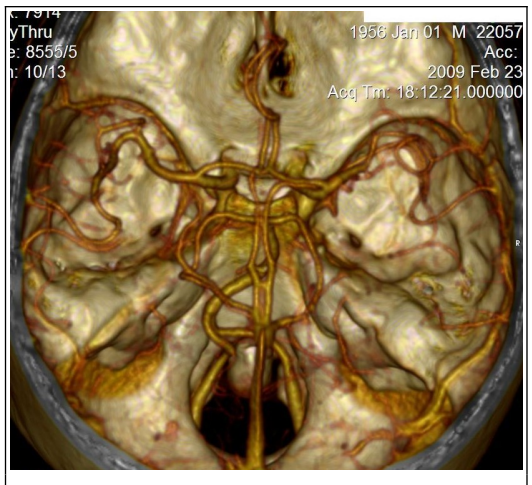
Methods

Forty one patients (17M and 24F) with a mean age 51.8 years (range 28-72 years) with CT-established diagnosis of SAH were included in our prospective study. Digital subtraction angiography (DSA) was routinely obtained upon admission, and then again between the 10th -14th post-ictal days (if there is a non peri-mesencephalic hemorrhage pattern, otherwise we repeat a brain MRA on the 30th post-ictal day). Admitting Glasgow Coma Scale (GCS) score, Fisher, and Hunt and Hess (H-H) grades were documented. All participants were classified according to the distribution of blood on the obtained CT to peri-mesencephalic and non peri-mesencephalic hemorrhage patterns.

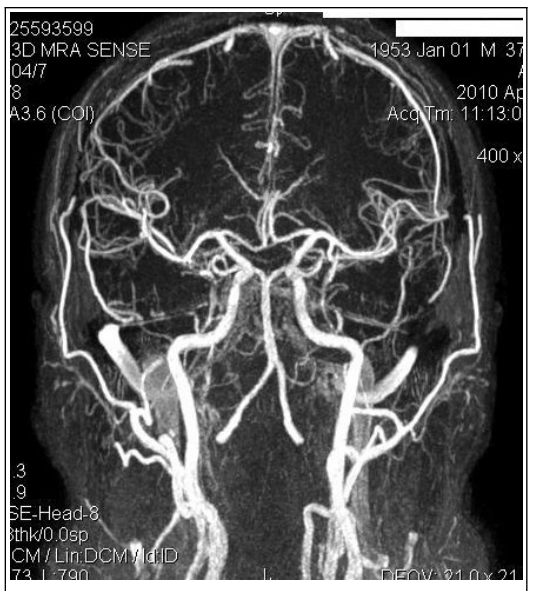
In addition, brain CTA and MRA along with brain and cervical spine MRIs were employed in all participants. Their clinical outcome was evaluated by applying the Glasgow Outcome (GOS) and the modified Rankin Scales (mRS). The mean follow-up time in our study was 29.66 months (range 1-36 mo).

Results

All of our patients were admitted with H-H grades I/II and GCS scores 14 and 15. Twenty four patients (58.56%) in our cohort had peri-mesencephalic hemorrhage, 16 (39%) non peri-mesencephalic, and 1 (2.44%) had solely intraventricular hemorrhage. All participants were discharged in an excellent neurological condition, with GOS 4/5 and mRS 0/1. We observed a case of sudden death, three weeks after the patient's discharge. Autopsy in this case showed severe, massive SAH.



sSAH with negative CT angiography



sSAH with negative MR angiography

Conclusions

Despite the belief that sSAH with negative angiogram is considered a benign clinical entity with a good prognosis, mid-term complications such as rebleeding, and/or ischemia may occur in these patients. Further study is necessary for outlining the prognosis of this entity.

Learning objectives

1.Participants will learn the incidence of angiographically negative sSAH.
2.Discuss the diagnostic approach of these patients.
3.Evaluate the mid-term prognosis and the potential adverse events of the disease.

References

1.Fontanella M, Rainero I, Panciani PP, Schatlo B, Benevello C, Garbossa D, Carlino C, Valfre W, Griva F, Bradac GB, Ducati A. Subarachnoid hemorrhage and negative angiography: clinical course and long-term follow-up. Neurosurg Rev. 2011;34(4):477-84.

2.Hui FK, Tumialán LM, Tanaka T, Cawley CM, Zhang YJ. Clinical differences between angiographically negative, diffuse subarachnoid hemorrhage and perimesencephalic subarachnoid hemorrhage. Neurocrit Care. 2009;11(1):64-70.

3.Khan N, Schuknecht B, Yonekawa Y. Presentation and management of patients with initial negative 4-vessel cerebral angiography in subarachnoid hemorrhage. Acta Neurochir Suppl. 2002;82:71-81.