

aneurysms with subarachnoid hemorrhage via transcranial -anterior interhemispheric approach. Every patient evaluated preoperatively with cranial CT angiography and cranial CT scans taken postoperatively. Surgical outcomes and complications were evaluated radiological and symptomatic follow-up results.

Results: The study included 15 patients who underwent transcranial-anterior interhemispheric anterior cerebral communicating artery aneurysm clipping surgery. All patients recovered without late-onset rebleeding. Neither acute nor chronic hydrocephalus developed in patients during hospitalised and follow-up periods after discharge. Possible cerebral vasospasms were investigated in all patients in early postoperative period with IV hydration and nimodipine infusion and all recovered without deficits. Their early and late postoperative follow-ups showed neither cognitive decline nor amnesia can be caused by gyrectomy or cortical contusion.

Conclusion: Interhemispheric approach is a relatively safe, effective, procedure with low morbidity rates and enables wide exposure on ACOM complex. It is associated with less brain retraction and olfactory nerve damage. Patients resume daily life after discharge. This approach should be considered not an alternative but primary surgical approach for ACOM aneurysms.

BRAIN AND SPINE 2 (2022) 101190 101411 CONTRAST LABELED IMMUNOLIPOSOMES FOR DETECTING RUPTURE PRONE ANEURYSMS

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Background: It is estimated that significant (3,2%) of population carries intracranial aneurysm (IA). An increasing number of imaging studies have caused that the chance of finding an incidental aneurysm is becoming more common. Since IA rupture causes subarachnoid haemorrhage (SAH) and have significant mortality and morbidity prophylactic treatment should be considered when IA is detected. The benefit and risk of treatment of IA is based on epidemiological estimate which takes account patient and aneurysm characteristics. However we know that aneurysm rupture is biological process where inflammation of aneurysm wall is actively leading to degeneration of aneurysm wall and finally weakens it until it bursts. Until now there have not been imaging method to detect inflammatory process of aneurysm wall.

Methods: We created targeting liposome (immunoliposome) for use in the imaging of aneurysm. Immunoliposome comprises antibodies against at least one vascular inflammatory marker associated with aneurysm inflammation (eg CD31) and a label and/or a contrast agent.

Results: In histological analysis of IAs where immunoliposome comprises antibodies against vascular inflammation with a label shows promising results for selectively detecting aneurysms inflammation. In magnetic resonance imaging we were able to detect immunoliposomes carrying gadolinium.

Conclusion: Our work open a new avenue for using contrast labeled immunoliposomes for detecting rupture prone aneurysms. Further research is needed to develop immunoliposomes to be used with magnetic resonance imaging in humans. Immunoliposomes can carry gadolinium and selectively bind to inflammatory section of aneurysm that can be detected with MRI. Treatment benefit and risk can be targeted to aneurysm and patients who benefit from it the most.

BRAIN AND SPINE 2 (2022) 101190 101412 IMPACT OF COVID-19 PANDEMIC ON TREATMENT MANAGEMENT AND CLINICAL OUTCOME OF ANEURYSMAL SUBARACHNOID HEMORRHAGE – A SINGLE CENTER EXPERIENCE

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Background: During the COVID-19 pandemic, decreased volumes of acute stroke admissions were reported. We aimed to examine whether subarachnoid hemorrhage (SAH) volumes demonstrated similar declines in our department. Furthermore, the impact of pandemic on disease progression should be analyzed.

Methods: We conducted a retrospective study in neurosurgical department of university hospital Frankfurt including patients with the diagnosis of aneurysmal SAH during the first year of COVID-pandemic. One year cumulative volume for SAH hospitalization procedures were compared to the one-year period before (03/2020–02/2021 versus 03/2019–02/2020) and the last 5 pre-COVID-pandemic years (2015-2020). All relevant patient characteristics concerning family history, disease history, clinical condition at admission, active/past COVID-infection, treatment management, complications and outcome were analyzed.

Results: There was a decline in SAH hospitalizations, with 84 admissions in the year immediately before and 56 admissions during the pandemic, without reaching a significance. No significant difference in analyzed patient characteristics including clinical condition at onset, treatment, complications and outcome, between 56 SAH patients admitted during COVID pandemic and treated patients in the last 5 years in pre-COVID period were found. Using a multivariable analysis, we detected young age ($p < 0.05$; OR4,2) and no existence of early hydrocephalus ($p < 0.05$; OR0,13) as important factors for a favorable outcome ($mRS \leq 0-2$) after aSAH during the COVID-pandemic. A past COVID-infection was detected in young patients suffering from aSAH (Age < 50years, $p < 0.05$; OR10,5) with increased rate of cerebral vasospasm after SAH onset ($p < 0.05$; OR26). Nevertheless, past COVID-infection did not reach a significance as a high risk factor for unfavorable outcome.

Conclusion: There was a relative decrease in the volume of SAH during the COVID-19 pandemic. Despite of extremely different conditions of hospitalization, there was no impairing significant effect on treatment and outcome of admitted SAH patients. A past COVID-infection seemed not to be a relevant limiting factor concerning favorable outcome.

BRAIN AND SPINE 2 (2022) 101190 101413 CHALLENGES OF MICROVASCULAR NEUROSURGERY DISCUSSED IN THE TREATMENT OF INTRACRANIAL ANEURYSMS PRIOR TREATED WITH VARIOUS ENDOVASCULAR METHODS: NORTH ATLANTA EXPERIENCE

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Background: Despite development of endovascular neurosurgery treatments, some patients still require open treatment of intracranial aneurysms. Anatomical nuances, refiling of aneurysm necks despite repeat endovascular therapy, and mass effect from the coil mass are the most frequent indications for open aneurysm treatment after prior endovascular intervention.

Methods: We reviewed our experience by analyzing 16 craniotomies who underwent open surgical intervention for prior treated intracranial aneurysms by endovascular means.

Results: Among those patients, 6 patients had a prior procedure involving combination of coiling embolization with or without stent-like or flow diversion device. One patient was treated with flow diversion device and 1 patient treated with PulseRider with coiling. An EC/IC bypass was performed in 2 patients formerly treated with stent assist coiling: one with broad-based MCA aneurysm and one with large ruptured fusiform MCA aneurysm for staged planning involving future endovascular treatment. Another patient previously treated for a giant ICA aneurysm with flow diversion had a delayed persistent chiasmatic compression requiring craniotomy for resection of the thrombosed aneurysm. Three patients showed delayed but new progressive third nerve palsies despite prior obliterated PCOM aneurysm and hence required craniotomy for aneurysm clipping and resection of the coil mass in addition to third nerve decompression. In all patients, the coil mass was identified as being partially outside of the aneurysm dome.

Conclusion: Widespread utilization of endovascular methods for treatment of an intracranial aneurysms could be a challenger for open vascular procedures and requires understanding of the endovascular devices by open vascular surgeons.