Aim of the Study To compare the functional outcome at 6 months of interventional vs medical management in patients with BAVMs in a tertiary care hospital in Mexico.

Methods We performed a retrospective observational study at the Instituto Nacional de Neurología y Neurocirugía in Mexico City from January 2016 to October 2021. The population was classified according to the type of treatment in: embolization, surgery, radiosurgery and medical management. Functional outcome (FO) was assessed with the modified Rankin scale (mRs) at 6 months as good (0–2) or bad (3–6).

Results Of 320 patients (mean [SD] age, 36.4 [13.7] years; 189 women [59.1%]) with BAVMs, 174 (54.3%) presented intracerebral hemorrhage, and the most frequent Spetzler-Martin grading scale was II (98 [30.6%]) and III (105 [32.8%]). FO was good in: 43 (60.5%) of 71 embolized patients, 83 (77.5%) of 107 submitted to surgical resection and in 78 (77.22%) of 101 treated with radiosurgery. When comparing interventional treatment with medical management, FO was better in interventional treatment (167 [68.2%]) versus 78 (31.8%); p=0.018).

Conclusions in our study FO of BAVMs was better in patients submitted to interventional treatment compared to medical management alone.

REFERENCES
4. Take-home points

Do you have any conflict of interest to declare?: No

ENDOVASCULAR TREATMENT OF BRAIN ARTERIOVENOUS MALFORMATIONS USING PRECIPITATING HYDROPHOBIC INJECTABLE LIQUID (PHIL)

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Introduction Application of liquid embolic agents (LEAs) is a method of choice for endovascular treatment of cerebral arteriovenous malformations (AVMs).

Materials and methods Since January 2011, our team has treated 787 patients with cerebral AVMs in two large medical centers of Novosibirsk and Moscow. 41 (5.2%) of these patients were treated using only the PHIL agent (Spetzler-Martin I–III), in 29 (70.7%) of them the treatment was finalized and 12 (29.3%) are undergoing further treatment. In the presented paper, the results of the 29 patients are considered.

Results Radical endovascular AVM occlusion was achieved in 17 (58.6%) of these patients. A one-stage procedure was performed in 14 (48.3%) patients, a two-stage – in 3 (10.35%). Subtotal thrombosing of AVM node was achieved in 7 (24.1%) patients. Later these nodes were surgically removed. 5 (17.2%) patients underwent radiosurgical treatment after subtotal AVM occlusion. A perioperative hemorrhage was registered in 1 patient that comprises 2.6% of the total number of endovascular procedures performed. The clinical outcomes in the majority of patients corresponded to mRS 0–1 (96.6%, n=28). A rough neurological deficit (total aphasia) in the postoperative period was noted in 1 patient (3.45%). In the series were no cases of mortality.

Discussion Using PHIL as the only LEA during endovascular treatment of cerebral AVMs enables one to obtain good angiographic and clinical results. Application of this agent provides high primary radicality and reduces the number of endovascular stages to achieve expected AVM occlusion, which significantly decreases complication risks and radiation exposure for a patient.

REFERENCES

Do you have any conflict of interest to declare?: No

SUCCESSFUL IMPLANTATION OF A PERIPHERAL STENT IN A DURAL ARTERIOVENOUS FISTULA (DAVF) OVER A J-SHAPED 0.035” STEEL-WIRE


Introduction Application of liquid embolic agents (LEAs) is a method of choice for endovascular treatment of cerebral arteriovenous malformations (AVMs).

Materials and methods Since January 2011, our team has

Clinical history/pre-treatment-imaging We report a successful implantation of a peripheral stent in a dural arteriovenous fistula (DAVF) over a j-shaped 0.035” steel-wire (Rosen). The patient was a 61-year old male presenting with a known DAVF Cognard 2b in the right sigmoid sinus. The jugular vein was thrombosed intracranially.

Treatment options/results Combined trans-arterial and transvenous balloon-protection would have been first line option, but the fistula was extensive along the transverse sinus and antegrade access was not easy to achieve due to vein thrombosis. Therefore an approach leading to downgrading (to Type 1-fistula) and permanent re-opening of the jugular vein was identified as the better treatment option. Direct jugular vein puncture was carried out, the vein was catherized as far cranially as possible with a 4-french glide catheter and a Rosen steel wire (Radiofocus, Tokyo, Japan) was used to reach the superior sagittal sinus (SSS). An Optimed sinus superflex-stent from the transverse sinus to the right JV was implanted. Post-implantation angiogram showed a significantly reduced flow in the feeding vessels[PM1] and antegrade venous drainage of the right hemisphere. At three months the drainage was still patent and the fistula reduced to a type 1-fistula.

Discussion In a challenging vascular anatomy we demonstrated feasibility of successful stent implantation in a dAVF over a 0.035” steel-wire with a residual Cognard 1 situation.

Take-home points We demonstrate that large diameter wires may be used safely in venous sinus and that stenting of dural
fistulas without additional embolization can be enough to reduce a fistula significantly.

**P44** ENDOVASCULAR TREATMENT OF BRAIN ARTERIOVENOUS MALFORMATIONS USING PRECIPITATING HYDROPHOBIC INJECTABLE LIQUID (PHIL)

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10.1136/neurintsurg-2022-ESMINT.65

**Introduction** Application of liquid embolic agents (LEAs) is a method of choice for endovascular treatment of cerebral arteriovenous malformations (AVMs). Nonadhesive agents (Onyx™ Medtronic, USA; Squid™ Balt, France) are preferred. Thanks to the precipitating hydrophobic injectable liquid (Phil™ Microven, USA) and its several advantages has been popular endovascular solution.

**Materials and methods** We have treated 787 patients with cerebral AVMs. 41(5,2%) of patients were treated using only the PHIL agent, in 29 (70,7%) the treatment was finalized and 12 (29,3%) have further treatment. The results of 29 patients are considered in this paper.

**Results** Radical occlusion was achieved in 17 (58,6%) patients. A one-stage procedure was performed in 14 (48,3%) patients, a two-stage in 3 (10,35%) of them. Subtotal thrombosing was achieved in 7 (24,1%) patients and later were surgically removed. 5 (17,2%) patients underwent radiosurgical treatment after subtotal occlusion.

A perioperative hemorrhage was registered in 1 patient. Sufficient ischemic complications were observed in 1 patient. The clinical outcomes corresponded to mRS 0–1 (96.6%). A rough neurological deficit in the postoperative period was noted in 1 patient (3,45%). In the series were no cases of mortality.

**Conclusion** Using PHIL as the only LEA during endovascular treatment of AVMs enables one to obtain good angiographic and clinical results. Application of this agent provides high primary radicality and reduces number of endovascular stages to achieve expected occlusion, which significantly decreases complication risks and radiation exposure. Considering there are no big observation series and multicenter studies for this agent, it requires further research.

**REFERENCES**

Do you have any conflict of interest to declare?: No

**P45** BOW HUNTER’S SYNDROME DUE TO KIMMERLE ANOMALY: A RARE CAUSE OF TRANSIENT VERTEBROBASILAR INSUFFICIENCY DIAGNOSED WITH PROVOCATIVE DSA

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10.1136/neurintsurg-2022-ESMINT.66

**Background** Rotational occlusion of the vertebral artery known as Bow hunter’s syndrome (BHS) is a rare cause of transient vertebrobasilar insufficiency symptoms. The underlying pathology is dynamic stenosis or compression of the VA by abnormal bony structures with neck rotation or extension in many cases, such as osteophyte, disc herniation, cervical spondylosis, tendinous bands or tumours. Complete or incomplete osification of the posterior atlantooccipital membrane forming a bony ridge between the superoposterior lateral mass of the atlas and its posterior arch is called the Kimmerle anomaly.

To our knowledge, this is the first reported case of BHS caused by the Kimmerle anomaly proved with provocative DSA and CT scan for a patient with long-standing transient vertebrobasilar insufficiency on vestibular sedatives.

**Objective** To report a rare case of a fifty-one-year-old driver who presented with transient giddiness only on reversing his car with rightward head rotation diagnosed with provocative digital subtraction angiography (DSA).

**Materials and methods** Clinical history and unique advanced imaging findings are reported.

**Results** Provocative DSA revealed dynamic stenosis of the left vertebral artery at C1 vertebral level. CT angiogram revealed ponticulus posticus or Kimmerle anomaly occurring due to calcification of the posterior atlantooccipital (PAO) membrane and treatments with surgical correction were advised. A high index of clinical suspicion helps in prompt diagnosis of BHS in patients with transient vertebrobasilar insufficiency.

**Conclusion** This case highlights the importance of provocative DSA in making the definitive diagnosis of BHS and also reports its causal association with calcified PAO membrane or Kimmerle anomaly.

**REFERENCES**

Do you have any conflict of interest to declare?: No

**P46** HOW MUCH OF THE IMPROVEMENT IN FUNCTIONAL OUTCOME AFTER SUCCESSFUL RECANALIZATION IS EXPLAINED BY FOLLOW-UP INFARCT VOLUME REDUCTION?

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10.1136/neurintsurg-2022-ESMINT.67

Do you have any conflict of interest to declare?: No