Vein of Galen Aneurysmal Malformation Case Series

The angiographies of 21 patients with true Vein of Galen Aneurysmal Malformation have been studied. MR angiography, Three-dimensional computed tomography angiography, and conventional digital subtraction angiography were performed for all patients with true VGAM. Transarterial embolization was done in 1 or more sessions for all cases.

Among the 21 cases, 14 cases were mural type, 5 cases were choroidal type, and 2 cases were mixed. Hydrocephalus was observed more in infants (92.3%), mural types (92.9%), giant and supergiant (87.5%) aneurysms, and in cases with a persistent limbic circle (90.91%). All cases of hydrocephalus were associated with significant stenosis (>70%) of the Falcine sinus draining system (100%).

Significant stenosis (>70%) of the draining sinus is a significant factor for VGAM aneurysmal enlargement and the occurrence of hydrocephalus. Probably, venous outflow impairment decreases the incidence of high-flow heart failure and increases the incidence of hydrocephalus [1)].

2015

667 patients who underwent endovascular embolization to treat vein of Galen malformations. The data were obtained through a literature search of PubMed databases. The authors also evaluate the efficacy and safety of the treatment. Mortality within the follow-up period is analyzed. Pooled estimates of proportions with corresponding 95% CIs were calculated using raw (i.e., untransformed) proportions (PRAW).

In the 34 studies evaluated, neonates accounted for 44% of the sample (95% CI 31%-57%; I(2) = 92.5%), infants accounted for 41% (95% CI 30%-51%; I(2) = 83.3%), and children and adults accounted for 12% (95% CI 7%-16%; I(2) = 52.9%). The meta-analysis revealed that complete occlusion was performed in 57% (95% CI 48%-65%; I(2) = 68.2%) of cases, with partial occlusion in 43% (95% CI 34%-51%; I(2) = 70.7%). The pooled proportion of patients showing a good outcome was 68% (95% CI 61%-76%; I(2) = 77.8%), while 31% showed a poor outcome (95% CI 24%-38%; I(2) = 75.6%). The proportional meta-analysis showed that postembolization mortality and complications were reported in 10% (95% CI 8%-12%; I(2) = 42.8%) and 37% (95% CI 29%-45%; I(2) = 79.1%), respectively. Complications included cerebral hemorrhage, cerebral ischemia, hydrocephalus, leg ischemia, and vessel perforation.

The successful treatment of vein of Galen malformations remains a complex therapeutic challenge. The authors' analysis of clinical history and research literature suggests that vein of Galen malformations treated with endovascular embolization can result in an acceptable mortality rate, complications, and good clinical outcome. Future large-scale, multicenter, randomized trials are necessary to confirm these findings [2)].

2012

Five patients underwent combined transarterial and transvenous embolization of their VGAM during

the study period. VGAMs were classified based on angioarchitecture as either choroidal (1/5) or mural (4/5) according to the classification scheme of Lasjaunias. In total, 13 embolization procedures were performed consisting of 1 to 3 treatment stages per patient. Complete or near complete occlusion was achieved in 4 patients, while subtotal occlusion was achieved in 1 patient. During follow-up (median 62.6 mo), all patients were either unchanged or cognitively and neurologically intact.

VGAM can be safely and effectively treated by staged transarterial and transvenous embolization. Using this strategy, excellent long-term cognitive and functional outcomes can be achieved [3].

1998

Eight children (six infants and two neonates) who suffered from symptoms caused by a mural-type VGM were treated by means of endovascular therapy. Their age at the time of treatment ranged from 13 days to 19 months (mean 7.6 months). Two neonates and three infants who presented with hydrocephalus and increased head circumference, one of whom was stabilized with a shunt, underwent elective closure of the malformations 3, 4, 6, 6, and 13 months later, respectively. Two patients presented with hemorrhage; one had an intraventricular hemorrhage (IVH) on the 1st day of life and one, a 5-month-old infant, suffered a large parenchymal hemorrhage and an IVH; both patients were immediately cured by means of endovascular techniques. One child presented with a seizure and cortical venous drainage that were treated immediately. Eleven separate treatment sessions were conducted; eight via transarterial femoral access and the remaining three via a transvenous approach. Two patients were treated by using transfemoral transvenous embolization with fibered coils, and one patient required a transtorcular transvenous approach to permit complete closure of the fistula with electrolytically detachable coils. The embolic devices used included silk suture emboli (three patients), electrolytically detachable coils (three patients), and fibered platinum coils (seven patients). In seven patients, complete closure was demonstrated on postembolization arteriographic studies. The eighth patient had stagnant flow in a giant 6-cm varix treated with arterial and venous coils but has not yet undergone follow-up studies. Late follow-up arteriography was performed in four patients at times ranging from 11 to 24 months postprocedure. In one patient, thrombosis of the malformation and shrinkage of the varix were confirmed on follow-up computerized tomography scanning. The remaining three patients have not yet undergone follow-up angiographic examination. Two asymptomatic complications occurred, including separation of the distal catheter, which was removed with a snare device, and a single platinum coil that embolized to the lung, producing no symptoms in 101 months of clinical follow up. The follow-up period ranged from 3 to 105 months, with a mean of 52 months [4].

1)
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