

Serebral AVM'lerde Sınıflamaların Önemi, Temel Hastane Deneyimi

The Effectiveness of The Classification on The Cerebral AVM's, A Basic Hospital Experience

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ÖZ

GİRİŞ ve AMAÇ: Serebral Arteriovenöz malformasyonlar nöroşirürji pratiğinde sık karşılaşılan vasküler hastalıklardır. Bu vasküler hastalıklarda cerrahi veya endovasküler yaklaşımlar gibi alternatif tedavi yöntemlerinin uygulanma endikasyonları halen tartışmalıdır. Serebral AVM tedavisinde konservatif, endovasküler, radyocerrahi ve mikrocerrahi gibi çeşitli yöntemler kullanılmaktadır. Başarılı klinik sonuçlar elde edebilmek için hangi hastada hangi tedavi yönteminin seçileceğine karar vermek en önemli adımdır.

GEREÇ ve YÖNTEM: Günümüzde Spetzler Martin skalası, AVM cerrahi uygunluğu veya cerrahi riskleri öngörmek amacıyla yaygın olarak kullanılan basit ve pratik bir skaladır. Tedavi seçimini belirlemede yeterli olup olmadığı tartışılrsa da halen uygun cerrahi kararı Spetzler Martin skalası zemininde verilmektedir. Çalışmamızda kliniğimizde 2009 ve 2016 yılları arasında cerrahi tedavi yapılan Spetzler Martin 3. derece olan 9 hasta değerlendirilmiştir.

BULGULAR: Genellikle rüptüre veya semptomatik AVM tanısı olan hastalarda mümkünse mikrocerrahi yöntemler tedavi için kullanılır.

TARTIŞMA ve SONUÇ: Cerrahi tedavinin mümkün olmadığı hastalarda ise radyocerrahi gibi farklı tedavi yöntemleri uygulanabilir. Devam eden tartışmalara rağmen biz klinik çalışmamızda, bilinenin aksine cerrahi tedavi uygulanan 3. derece AVM hastalarının tedavisinde başarılı sonuçlar elde edilebileceğini sunduk.

Anahtar Kelimeler: Serebral AVM, tedavi, cerrahi, sınıflama

ABSTRACT

INTRODUCTION: Cerebral arteriovenous malformation (AVM) is a common vascular disease in neurosurgery, and the indication for alternative treatments remains controversial. Cerebral AVM's have different alternative treatments as conservative, endovascular, radiosurgery and microsurgical excision. Microsurgical excision is safer and may be best choice for appropriate patients. The grading of Spetzler Martin has been the most widely used scale to predict the operability and surgical risks of AVMs because of its ease, simplicity and practicality. Careful selection of patients and planning of surgery are crucial for the good outcomes.

Developed AVM grading scales like help to predict the safety of treatment, but it doesn't eliminate the need for careful preoperative planning. Despite having validated predictive value, SM grading system may be somewhat too simplistic for many occasions, and additional scales have been proposed. The objective of this abstract is to briefly discuss these aspects about AVM's SM Grade III for a decision of surgery. Contrary to common belief, we have good outcomes in SM Grade III patients with the microsurgery.

METHODS: We studied 9 cases of SM Grade III AVM's received surgical resection at our institution between 2010 and 2016. Spetzler-Martin grading system was used to classify the patients who underwent surgical treatment. Neurological outcome was assessed preoperative and postoperative with the Modified Rankin Scale.

RESULTS: Decision for the surgery and the role of neurosurgeon should be given by a neurovascular team. But it is not limited with the team, also the patient has a main role for the decision of treatment options.

DISCUSSION and CONCLUSION: With careful patient selection, even high grade lesions, particularly those that have ruptured, may be good candidates for microsurgical treatment.

Keywords: Serebral AVM, treatment, surgery, classification

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INTRODUCTION

Cerebral arteriovenous malformation (AVM) is a common vascular disease in neurosurgery and the indication for alternative treatments remains controversial (1). AVM's are complex vascular anomalies which is typically form the nidus between feeders and draining veins. Improved imaging methods, including 3D angiography and perfusion MR techniques, are increasing our understanding of detailed vascular anatomy of AVMs (2, 3).

The most common presentation of an AVM is the intracerebral hemorrhage (50%). The second most common form of presentation is epilepsy followed by headache and focal neurologic deficits (1, 4). Small AVM's are not easily diagnosed unless they bleed, whereas large AVMs may cause a variety of symptoms leading to diagnosis before rupture (5, 6).

Cerebral AVM's have different treatment alternatives as conservative, endovascular, radiosurgery and microsurgical excision. Microsurgical excision is safer and may be best choice for appropriate patients. A complete and definitive microsurgical excision of an AVM can be achieved with high success and low morbidity-mortality rate (7,9). Carefully selection of patients and planning of surgery are crucial for the good outcomes (10).

Developed AVM grading scales like Spetzler-Martin help to predict the safety of treatment, but it doesn't eliminate the need for careful preoperative planning. Despite having validated predictive value, SM grading system may be somewhat too simplistic for many occasions, and additional scales have been proposed. The objective of this abstract is to briefly discuss these aspects about AVM's SM Grade III for a decision of surgery. Contrary to common belief, we suggest that it might be good outcomes in SM Grade III patients with the microsurgery.

MATERIAL and METHOD

This is a tertiary level hospital experience so we studied 9 cases of SM Grade III AVM's received surgical resection between 2010 and 2016 in the Osmangazi University Department of Neurosurgery (Table 1). In order to confirm the diagnosis, we identify perfectly arterial afferances and venous

Table 1: List of the patients

Patient	Age	Sex	Complaint	S-M Grade	Region	Hemorrhage	Aneurysm	RS (preop)	RS (postop)
1	69	M	Headache	S2V0E1	Temporal	YES	NO	1	0
2	33	M	Headache	S2V0E1	Frontal	YES	NO	1	0
3	64	M	Headache	S2V0E1	Parietal	YES	NO	1	0
4	62	M	Headache	S2V0E1	Frontal	NO	NO	1	0
5	39	F	Headache	S2V1E0	Frontal	NO	NO	1	0
6	33	M	Headache	S2V1E1	Parietal	NO	YES	1	0
7	14	F	Epilepsy	S2V0E1	Temporal	YES	NO	1	0
8	66	F	Hemiparesy	S2V0E1	Temporal	YES	NO	2	1
9	60	M	Headache	S2V1E0	Parietal	NO	NO	1	0

drainage on the preoperative cerebral angiography in all patients. During the surgery the main feeding arteries usually were clipped first. Then the nidus was dissected circumferentially, from superficial to deep. The draining veins usually were coagulated last. So we perform completely resection of the AVM.

RESULTS

Patients admitted to our clinic with the neurologic complaints as headache (75%), hemiparesis (12%) or epilepsy (12%). The age range between 14-69 with the average of 48,8. There were 3 female, 6 male patients with an average of 1:2. The sizes of the AVMs ranged from 3 to 5 cm. Spetzler-Martin grading system was used to classify the patients who underwent surgical treatment.

In the 5 patient with ruptured AVM we remove the hemorrhage at the same time. In one patient has an aneurysm concomittant with AVM.

Neurological outcome was assessed preoperative and postoperative with the Modified Rankin Scale. Radiological outcomes after surgery were defined as either complete or incomplete resection of AVM's.

DISCUSSION

Complete microsurgical resection of a cerebral arteriovenous malformation (AVM) is the gold standard of therapy because it can eliminate the risk of hemorrhage immediately (1, 7). According to Fisher and Harrigan, surgical resection is an effective primary approach after hemorrhage of the AVM's. If a large hematoma requires urgent removal, the AVM is often removed during the same procedure (17). Especially for treatment of giant cerebral AVM's microsurgery is one of the most effective method for treatment (9).

The surgery for the deeply placed AVM's, which located in the thalamus, basal ganglia and brain stem, have a high surgical risk (18). Contrary to common belief deep AVM's contribute to an aggressive natural history and need to excision early. Potts et al suggest that deep AVM's can be operable lesions and they also have good outcomes with microsurgery (9). In another clinical study Danaila has good postoperative results with interhemispheric surgical approach for the deep AVM's (8).

The grading scale of Spetzler Martin has been the most widely used scale to predict the operability and surgical risks of AVMs because of its ease, simplicity and practicality (1, 7, 11). This scale based on the maximum diameter of the AVM, its eloquent location and the venous drainage (12). In a simple way Grade I-II brain AVM (small and superficial) are at low risk for surgical resection, Grade III (lesions in diameter superior to 3 cm) at intermediate risk and in contrast the grade IV-V (large and deep) at high risk of postoperative morbidity (13, 14). Intracranial AVMS that are graded as 3 on SM scale can be either operable or nonoperable? Especially it depends on the decision of surgeon (10). SM classification is not enough, but today decision of which lesions are amenable to the surgery are based on SM classification. (8, 15). For the lesions in diameter inferior to 3 cm, the postoperative mortality and morbidity was reported

lower than 5% (10,16). If the AVM's are unfeasible, patients are treated with SRS (7). Grade III AVM's are a diverse group of lesions with varied presentations (11). Lawton modified the Spetzler Martin scale and he suggest that grade III AVM's are divided four different groups according to their size, location in eloquent cortex and venous drainage with potentially different management strategies and outcome for the subgroups (14). The another subclassification of SM grade III AVM's by D' Oliviera and colleagues. They divide AVM's into two groups and in their experience grade IIIA (small size/eloquent) AVM's had a much better outcome than grade IIIB (medium size/large) AVM's (19). New grading scales such as they proposed by Lawton and D'Oliviera, improve the predictive value of the widely used Spetzler-Martin Scale.

Classifications, diagnostic imaging methods and treatment modalities for AVM's should continue to be improved and they will lead to safer and patient-specific treatment plans. Still the surgery and neurovascular procedures have been discussed about the advantages and risk of each treatment.

Decision for the surgery and the role of neurosurgeon should be given by a neurovascular team. But it is not limited with the team, also the patient has a main role for the decision of treatment options. In conclusion, with careful patient selection, even high grade lesions, particularly those that have ruptured, may be good candidates for microsurgical treatment.

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