

Endovascular treatment of anterior communicating artery aneurysmsAlejandro Rojas-Marroquín^{1,2*}, Daniel Valencia^{3,4}, Carlos Sánchez Gómez^{5,6}, Jharol Jair Rojas⁷¹Dept. of Neurosurgery, Division of Endovascular Neurosurgery, Medilaser Clinic, Tunja, Colombia²Endovascular Neurosurgeon, Universidad Nacional Autónoma de México, México DF, México³Critical Care Unit, Medilaser Clinic, Tunja, Colombia.⁴Internist, Universidad Militar, Bogotá, Colombia.⁵Dept. of Anesthesiology, Medilaser Clinic, Tunja, Colombia.⁶Anesthesiologist, Universidad Javeriana, Bogotá, Colombia⁷Male Nurse, UDCA, Bogotá, Colombia***Corresponding author**

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Abstract: Neurological endovascular therapy (*coiling*) is nowadays presented as an excellent alternative to traditional *clipping* of cerebral aneurysms. Take into account this, the purpose of this article is to report 10 cases of ruptured aneurysms in the anterior communicating artery and that have been treated endovascularly in a tertiary Care Center in Tunja / Colombia from November 1, 2015 to September 31, 2016. In this report you can find a description of the age group, sex, Hunt and Hess and Fisher scales that are made at the patients' admission and also the complications are described.

Keywords: Aneurysms, anterior communicating artery, endovascular treatment.

INTRODUCTION

The anterior communicating artery is the most common place of cerebral aneurysms in most series and its rupture accounts for approximately 40% of subarachnoid hemorrhages in adults [1-4]. The aneurysms of the anterior communicating artery represent a great challenge from the neurosurgical point of view because of its frequent anatomical variations and the presence of perforators. In recent years, neurological endovascular therapy has emerged as an interesting alternative for the management of this kind of injury, thanks to advances in techniques and embolization devices [5, 6].

In this article, we will present our initial experience in 10 cases of ruptured aneurysms in the anterior communicating artery, at the same time as a description of the Hunt and Hess scale and Fisher scale at admission, including age group and complications.

CASE REPORT

A total of 10 patients were treated endovascularly, 100% of the patients were admitted to the emergency room with ruptured aneurysms, 60% of the cases were women, and 40% were men. The age range was between 36 and 79 years with a mean age of 51.4 years. At the time of admission to emergencies his Hunt and Hess scale and the Fisher scale were documented according to findings of brain CT Scan.

After the primary management in the ER, the patients were transferred to the angiographic suite of the Department of Endovascular Neurosurgery to perform endovascular occlusion of the aneurysm and were later managed in the Intensive Care Unit. In our study, we documented 40% of patients with Hunt and Hess II scales, 50% with Hunt and Hess III scales and 10% with Hunt Hess IV scales. As for the Fisher scale, 20% had a grade II, 50% grade III and 30% grade IV. In general, 30% of complications were present: 10% per stroke and 20% for vasospasm and 10% mortality.

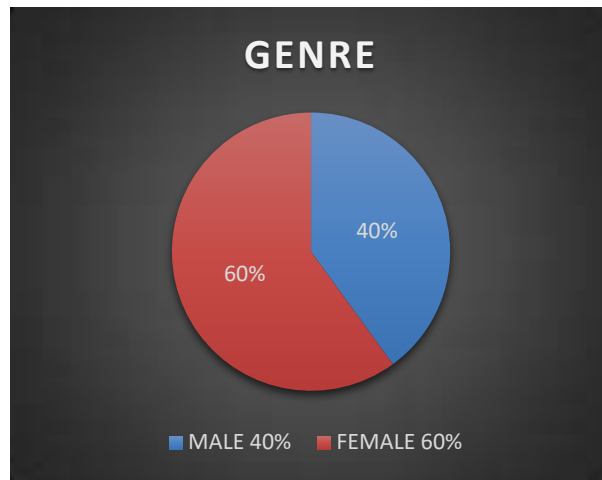


Table-1: 60% of the cases were women, and 40% were men.

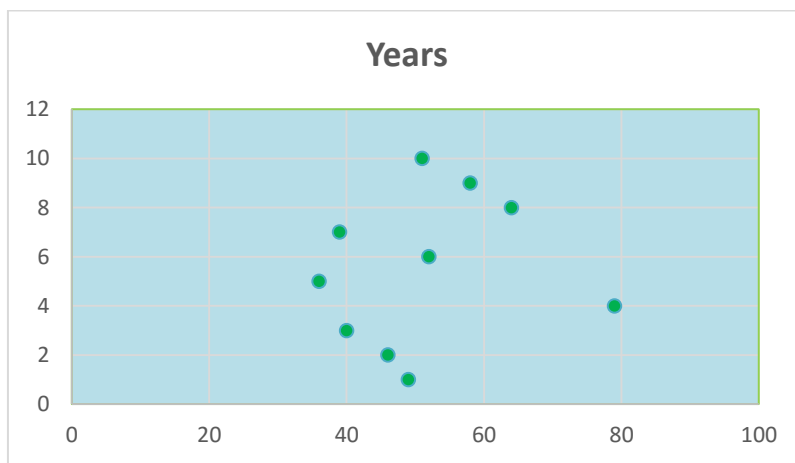


Table-2: The age range was between 36 and 79 years with a mean age of 51.4 years.

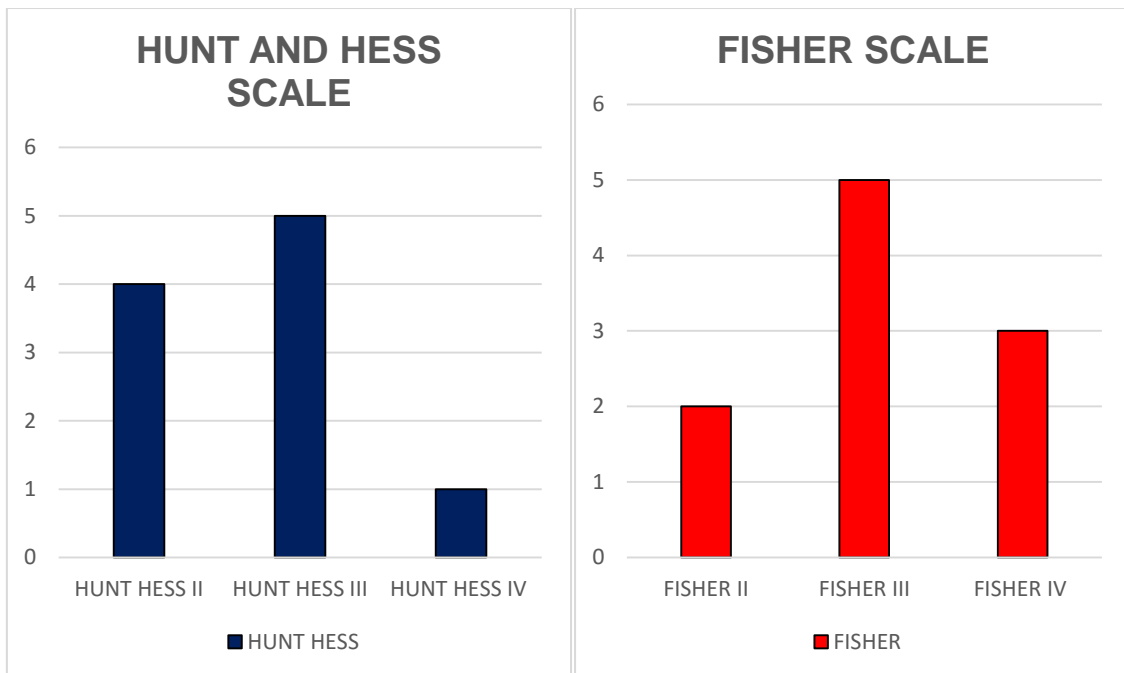


Table-3: H-H II Scale (40%), H-H III Scale (50%), H-H IV scale (10%) Table 4.20% had a grade II, 50% grade III and 30% grade IV (Fisher Scale).



Fig-1A: Brain CT scan: subarachnoid hemorrhage in interhemispheric fissure, **1B:** DSA (Digital subtraction angiography): Anterior communicating artery aneurysm. **1C:** post embolization control)

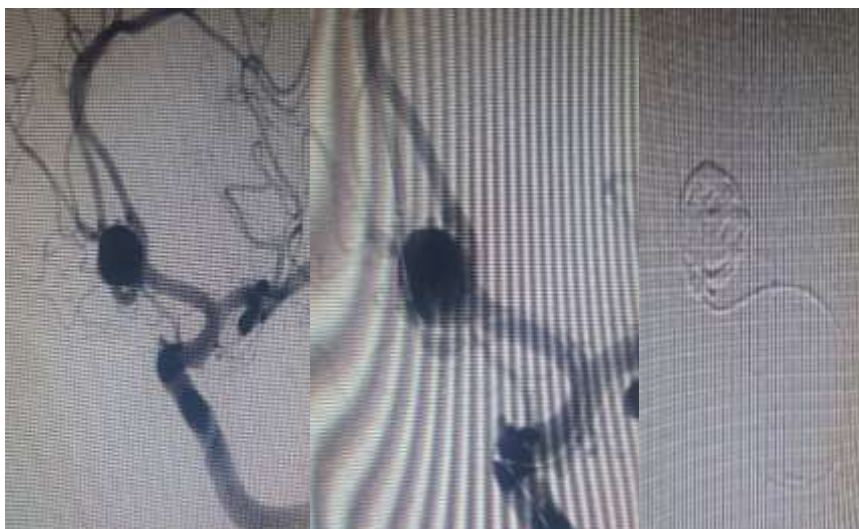


Fig-2A & 2B: DSA:Anterior communicating artery aneurysm. **2C:** post embolization control

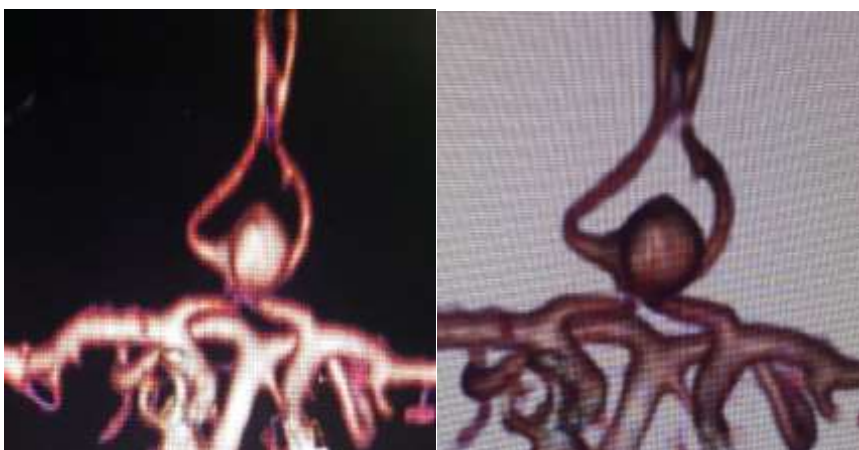


Fig-3A & 3B: Angio-CT with 3D reconstruction demonstrating Anterior communicating artery aneurysm



Fig-4A DSA: Anterior communicating artery aneurysm.4B: Post embolization control



Fig-5A: DSA: Anterior communicating artery aneurysm.5B: Post embolization control



Fig-6A: Anterior communicating artery aneurysm.6B: Post embolization control

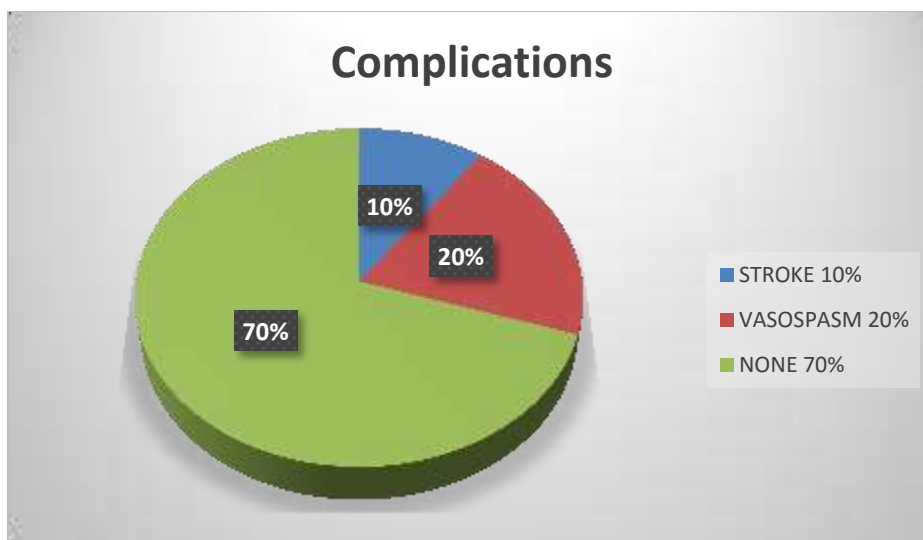


Table-5: In general, 30% of complications were present: 10% per stroke and 20% for vasospasm.

DISCUSSION

Neurological endovascular therapy has emerged as an interesting alternative for the management of ruptured aneurysms of the anterior communicating artery complex, thanks to the advancement of techniques and embolization devices. However, the complications associated with embolization of ruptured aneurysms of the anterior communicating artery are not negligible [7]. There are, on many occasions, morphological limitations that include the direction of the dome, the angle, the size and the form of the aneurysm, that make the endovascular management of these lesions a great challenge [8]. In spite of this, with the introduction of 3D rotational angiography, it is possible to study the geometry of the aneurysm and the parental arteries by selecting the microcatheters that provide greater support and intra-aneurysmal stability during coil embolization

or stent-assisted coil embolization or balloon-assisted coil embolization [9-11]. In our small series of cases we had 10% mortality due to stroke and 20% morbidity due to vasospasm. Thus, it is confirmed what reports in the world literature that Fisher's larger scale, greater scale of Hunt and Hess and the greater the patient's age, the greater the risk of complications.

CONCLUSION

The endovascular treatment of anterior communicating artery aneurysms is an important alternative to take into account in the management of these patients, with a significant rate of angiographic occlusion. However, the complications associated with embolization of ruptured anterior communicating artery aneurysms are not negligible.

SUMMARY OF FINDINGS

Table-6: SUMMARY OF FINDINGS

PATIENT	AGE	GENRE	FISHER	HUNT HESS	COMPLICATION	ALIVE
1	49	F	III	III	NOT	YES
2	46	F	III	III	NOT	YES
3	40	F	III	II	NOT	YES
4	79	M	IV	IV	STROKE	NOT
5	36	F	II	II	NOT	YES
6	52	F	III	II	NOT	YES
7	39	M	IV	III	VASOSPASM	YES
8	64	M	II	III	NOT	YES
9	58	M	III	II	NOT	YES
10	51	F	IV	III	VASOSPASM	YES

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