CRIMSON PUBLISHERS
Wings to the Research

Orthoplastic Surgery & Orthopedic Care International Journal

ISSN 2578-0069

Short Communication

Aneurysmal Subarachnoid Hemorrhage

Ortega Zufiria JM*

University Hospital of Getafe, Spain

***Corresponding author:** Ortega Zufiria JM, Neurosurgery Service, University Hospital of Getafe, Getafe, Madrid, Spain

Submission: November 09, 2017; **Published:** March 14, 2018

Abstract

Introduction: Aneurysmal subarachnoid hemorrhage (ASH) is a very serious phenomenon associated with high rates of morbidity and mortality. After the initial hemorrhage, 50% of patients die, and 30-40% of patients re-blood during the first month. The percentage of deaths due to re-bleeding is between 60% and 75%. Re-bleeding prevention with both endovascular embolization and surgery, decrease mortality and improve the quality of life of survivors. Nowadays, endovascular embolization has become the method of choice to prevent re-bleeding, especially in Europe, largely replacing surgery.

Objective: The aim of this study was to describe a series of patients with spontaneous subarachnoid hemorrhage treated at the University Hospital of Getafe between 1995 and 2015 (n=343; 185 surgically and 158 endovascular embolization), analyze the diagnosis and treatment, establish main prognosis factors and compare the results of both treatments (clip and coil).

Material and Method: We have made a retrospective study, by reviewing medical history, analyzing epidemiological data.

Results: We studied a total of 343 patients, 185 surgeries and 158 embolization. It has been shown that embolization, the treatment of choice today, has decreased the number of complications in these years.

Discussion: The long period of time analyzed, 20 years, does not allow a homogeneous study of the sample due to changes in the diagnostic and therapeutic criteria, but allows obtaining interesting results and conclusions.

Conclusion: It has been established that the performance of brain computed tomography (CT) and arteriography, and ICU admission, is the best medical management in these patients. In this study, clinical income situation, the amount of blood in CT and the patient's age, have proved the most decisive factors in the final outcome. Endovascular embolization is a safe method of treating ruptured aneurysms.

Keywords: Subarachnoid Hemorrhage; Intracranial Aneurysm; Therapeutics; Prognosis

Introduction and Objectives

Subarachnoid hemorrhage (SAH) is a serious clinical entity, and represents an important cause of mortality and morbidity in industrialized countries, which constitutes a very important effort, both at a human and economic level [1]. Aneurysmal SAH is a very serious phenomenon, severe associated with high morbidity and mortality rates. After the initial hemorrhage, 50% of the patients die, and between 30-40% of the patients undergo episode of re-bleeding during the first month [2,3]. The percentage of deaths due to re-bleeding varies in the different series analyzed between 60% and 75% [4-6]. Currently, the knowledge of the intracranial patho physiology has advanced a lot, but there are still wide gaps in the understanding of the pathogenesis that limit the development of an optimal therapeutic scheme. In addition, the clinical model of SAH is multi factorial, both in terms of clinical and pathological treatment, so it is very difficult to determine the effect of a pathological or therapeutic variable on the evolution or the final prognosis of patients.

The progress experienced in the management and treatment of patients suffering from SAH allowed a marked improvement in prognosis [5], achieving a reduction in the mortality rate by up to 30%, and not increasing the number of patients remaining in a persistent vegetative state or developing severe disability, according to the criteria of the Glasgow Evolutionary Scale, although this is still close to 40%. Currently, it is necessary to determine the most influential factors in the final evolution in order to establish prognostic models in order to be able to elaborate effective treatment and rehabilitation plans [6-10]. Considering the foregoing, this work intends to fulfill the following objectives:

a. To gather a wide series of patients who have suffered from SAH and to study their epidemiological profile and clinical presentation form.

b. Design a practical scheme of clinical performance in these patients, as well as describe the risk factors that determine the probability of developing complications in the group of patients

suffering from SAH, studying the main factors that influence clinical evolution.

c. Compare conventional surgical treatment ("clip") with endovascular embolization therapy ("coil").

d. Analyze the different variables that can act on the final forecast, determining which have greater significance and design a prediction model of the initial and late prognosis.

Results

Regarding descriptive epidemiology, 494 clinical histories were reviewed, 151 patients were excluded because they did not meet inclusion criteria or met exclusion criteria, so finally in this study the data of 343 patients with aneurysmal HSA. Of these, 185 have been treated by surgery and 158 with endovascular embolization (Figure 1). The presence of multiple aneurysms was observed in 15.73% of patients (clipping= 12.94% vs embolized= 21.79%). Of the total of 343 patients, there were 191 women (55.65%) and 152 men (44.35%). The age range ranges from 14 to 82 years with an average age of 50±13 years. The average annual incidence estimated in the study was 1.84±0.63 per 100,000 inhabitants per year (considering the subsidiary health area of this center as 850,000 inhabitants).

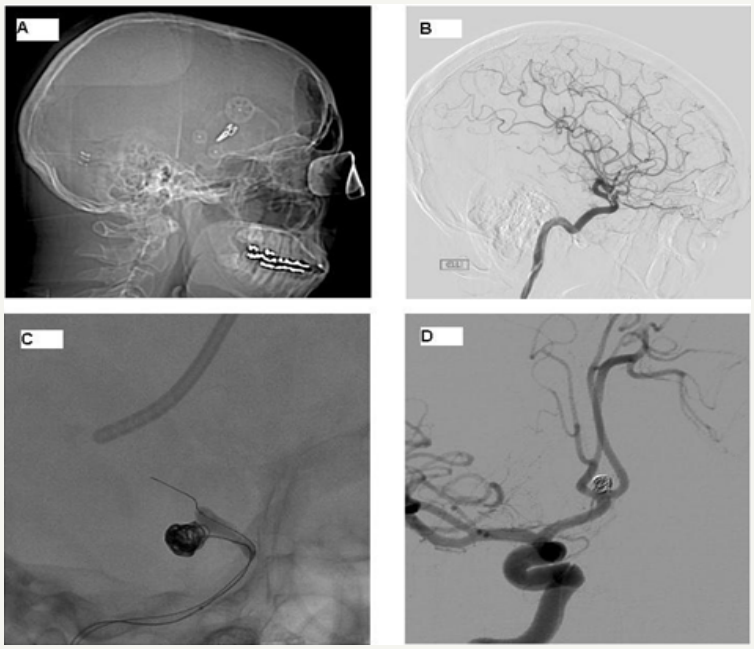

Figure 1: Surgical treatment in the upper images (A and B) and endovascular images in the lower images (C and D).

No statistically significant differences were found in relation to the percentage of hospital deaths among the patients treated at our center, although there is a trend towards a higher percentage of deaths among surgically treated patients (clipping= 8.97% vs embolized= 2.94 %, p = 0.055). All the figures analyzed improve with the passage of time in the group of embolized patients, remaining stable in surgical patients.

Discussion

In the present study we have two groups of patients, which could be grouped into those operated surgically and those patients with embolized aneurysms. According to the data obtained, both treatment groups are homogeneous, uniform and comparable, although significant differences can be observed in the aneurysmal location. The ample period of time analyzed, of 20 years, does not allow a homogeneous study of the sample due to the changes experienced in the diagnostic and therapeutic criteria, but it allows obtaining interesting results and conclusions. For example, with the passage of time, the indications for performing cerebral arteriography of control or the timing of the intervention have varied.

Considering the treatment, the clinical guidelines accepted at each moment were followed. We assume that the neurological status of admission is comparable in the two groups, having been determined by the Glasgow scale, despite the relative subjectivity of the observer. The data found in the study on age at which hemorrhage occurs, distribution by sex and presence of multiple aneurysms are super imposable to those published in the scientific literature.

The incidence of SAH collected is lower than expected with respect to data published in both the national and international literature [2,9]. It is estimated that the cause of this difference could be secondary to a possible selection bias, since one of the criteria of exclusion is not receiving surgical or endovascular treatment, or patients who have been referred to other centers, due to the dispersion of the health area.

However, it is interesting to see that it has been reported that in certain centers with a high volume of HSA treatment, longer hospital stays are shown [6,7,11]. These studies argue that this phenomenon could be due to the fact that they group patients of greater age complexity, or because they are less "efficient" centers.

How to cite this article: Ortega Z J. Aneurysmal Subarachnoid Hemorrhage. Ortho Surg Ortho Care Int J . 1(3). OOIJ.000515.2018.
DOI: 10.31031/OOIJ.2018.01.000515

According to the opinion of several authors, the possible cause of the long stay is not due to any of the previous theories but to the fact that the collection of all re-admissions penalizes the average global stay compared to other studies, as in our work.

The mean hospital stay recorded in the scientific literature is 15-20 days, and 14-17 days for patients who undergo surgery and embolization, respectively. The vast majority of series find statistically significant differences in hospital stays, tending to show shorter stays for embolized patients, although there are some series in which this is not clearly demonstrated.

The average stay in ICU collected in the diverse literature analyzed is 1.8 and 1.7 days for those operated and embolized respectively. In the present study, the previously published trend in which embolized patients usually have a shorter stay in the ICU is reversed. Unfortunately, we do not have a sufficiently large sample of patients operated on to be able to affirm this trend.

The stay in the ICU usually reflects the level of complexity of the patients treated. Very likely both the excess of stay in ICU compared to previously published, as the reversal of statistical differences are due to the embolized patients have a possible worse clinical grade post-bleeding and pre-treatment with respect to clipping, by the indications themselves of the clinical guidelines.

With regard to prognostic factors, clinical and radiological criteria are clearly established, according to the most recent studies, which allow orientation in the face of the ideal treatment, as well as the opportune moment or "timing", so controversial in the neurosurgical field. It is important to highlight the novelty of blood volume measurement in CT, something that clearly conditions the final result. The logistic regression models allow us to know, introducing the analyzed variables, the "theoretical" final evolutionary prognosis of the patient, and according to this, decide which is the ideal treatment for each patient and the moment of it, always following the principles of "optimism" "Logical that make that all valid therapeutic possibilities are administered, even if the patient is in a bad clinical and neurological situation [7-10].

Conclusion

a. Subarachnoid hemorrhage is more frequent in women (1.2/1), predominantly in patients whose ages range between 45 and 55 years. The incidence in our environment can be established in 1.5 cases per 100,000 inhabitants per year, below the figures collected in previous studies.

b. In the clinical management of subarachnoid hemorrhage, patients can be classified into groups, according to the risk factors they present, according to the neurological situation at admission, the medical history and the images found on CT.

c. All patients must be examined with CT, immediately after being received in the hospital, as well as proceed to their admission to the ICU. The measurement of the volume of blood in the CT is useful, being demonstrated that to greater volume of blood, worse prognosis.

d. The Glasgow scale for the Coma and the Glasgow Evolutionary scale are well related to the clinical situation and the final prognosis of the patient with SAH.

e. Endovascular treatment improves the prognosis and overall survival of patients suffering from aneurysmal rupture, being a safe procedure at the present time.

f. The most influential parameters in the final prognosis in patients suffering from SAH are, in this order, the neurological situation at admission, the amount of blood in the skull CT and age [12-16].

References

1. Alshafai N, Cusimano MD, Falenchuk O (2013) Global differences in the present and future management of cerebral aneurysms. World Neurosurg 80(6): 17-22.
2. Ayling OG, Ibrahim GM, Drake B, Torner JC, Macdonald RL (2015) Operative complications and differences in outcome after clipping and coiling of ruptured intracranial aneurysms. J Neurosurg 123(3): 621-628.
3. Bogason ET, Anderson B, Brandmeir NJ, Church EW, Cooke J, et al. (2014) The epidemiology of admissions of nontraumatic subarachnoid hemorrhage in the United States. Neurosurgery 74(2): 227-229.
4. Darsaut TE, Jack AS, Kerr RS, Raymond J (2013) International subarachnoid aneurysm trial - ISAT part II: study protocol for a randomized controlled trial. Trials 29(14): 156.
5. Grasso G, Alafaci C, Macdonald RL (2017) Management of aneurysmal subarachnoidhemorrhage: State of the art and future perspectives. Surg Neurol Int 19: 8-11.
6. Jaja BN, Lingsma H, Schweizer TA, Thorpe KE, Steyerberg EW, et al. (2015) Prognostic value of premorbid hypertension and neurological status in aneurysmal subarachnoid hemorrhage: pooled analyses of individual patient data in the SAHIT repository. J Neurosurg 122(3): 644-652.
7. Konczalla J, Seifert V, Beck J, Güresir E, Vatter H, et al. (2018) Outcome after hunt and hess grade V subarachnoid hemorrhage: a comparison ofpre-coiling era (1980-1995) versus post-ISAT era (2005-2014). J Neurosurg 128(1): 100-110.
8. Lo BW, Fukuda H, Nishimura Y, Farrokhyar F, Thabane L, et al. (2015) Systematic review of clinical prediction tools and prognostic factors inaneurysmal subarachnoid hemorrhage. Surg Neurol Int 11(6): 135.
9. Molyneux AJ, Birks J, Clarke A, Sneade M, Kerr RS (2015) The durability of endovascular coiling versus neurosurgical clipping of ruptured cerebral aneurysms: 18 year follow-up of the UK cohort of the International Subarachnoid Aneurysm Trial (ISAT). Lancet 385(9969): 691-697.
10. Pegoli M, Mandrekar J, Rabinstein AA, Lanzino G (2015) Predictors of excellent functional outcome in aneurysmal subarachnoid hemorrhage. J Neurosurg 122(2): 14-18.
11. Song JP, Ni W, Gu YX, Zhu W, Chen L, et al. (2017) Epidemiological features of nontraumatic spontaneous subarachnoid hemorrhage in China: a nationwide hospital-based multicenter study. Chin Med J (Engl) 130(7): 776-781.
12. Spetzler RF, McDougall CG, Zabramski JM, Albuquerque FC, Hills NK, et al. (2015) The barrow ruptured aneurysm trial: 6-year results. J Neurosurg 123(3): 609-617.
13. Tarnutzer AA, Lee SH, Robinson KA, Wang Z, Edlow JA, et al. (2017) ED misdiagnosis of cerebrovascular events in the era of modern neuroimaging: A meta-analysis. Neurology 88(15): 1468-1477.

How to cite this article: Ortega Z J. Aneurysmal Subarachnoid Hemorrhage. Ortho Surg Ortho Care Int J . 1(3). OOIJ.000515.2018.
DOI: 10.31031/OOIJ.2018.01.000515

14. Wesali S, Persson HC, Cederin B, Sunnerhagen KS (2015) Improved survival after non-traumatic subarachnoid haemorrhage with structured care pathways and modern intensive care. Clin Neurol Neurosurg 31(138): 52-58.

15. Xia ZW, Cheng Q (2017) Strategy for poor grade aneurysmal subarachnoid haemorrhage. European Journal of Neurology 24(4): e23.

16. Korja M, Kivisaari R, Rezai Jahromi B, Lehto H (2017) Natural history of ruptured but untreated intracranial aneurysms. Stroke 48(4): 1081-1084.