

Chapter X– L. Picard

Middle Cerebral Artery Aneurysm's. Interest and indications of Endovascular Treatment 187 cases

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From October 1992 until December 2004, 940 patients who presented with 1120 aneurysms were observed in the Department of Neuroradiology. 238 aneurysms (21,2 %) were located on middle cerebral artery. This location concerned 21,5% of the patients. This study is realized on 174 patients (187 aneurysms) with middle or long term follow up; the clinical and angiographic follow up has been realized at 6 months, 1 – 3 and 5 years. 83 patients presented with ruptured aneurysms – 104 aneurysms were unruptured (fortuitous discovery or neurologic disturbances)

Indications :

According to an excellent cooperation between neuroradiological and neurosurgical team, as far it is possible, we first try to treat the intracranial aneurysms by endovascular approach. Consequently 152 aneurysms (81,3 %) were successfully treated by endovascular occlusion : 75 ruptured and 77 unruptured; for 7 patients (3,7 %), the attempt of endovascular occlusion failed.

Anatomical Results in 174 patients (187 aneurysms):

75 ruptured and 77 unruptured aneurysms were treated. Among the ruptured aneurysms, complete occlusion (100 %) was achieved in 22 cases (29,3 %), good occlusion (> 90 %) in 38 cases (50,7 %) and partial occlusion (< 90 %) in 15 (20 %). For the unruptured aneurysms, the results were a little better : complete occlusion in 24 (31,2 %), good occlusion in 54 (54,5 %) and partial occlusion in 11 (14,3 %). If we add complete and good occlusion on both ruptured and unruptured aneurysms, good anatomical results (> 90 %) were obtained in 126 cases (82,9 %). The late middle term follow up is characterized by 14 recanalizations but only 5 patients needed to be retreated either by neurosurgery or by endovascular approach.

Clinical results :

According to the Glasgow Outcome Scale, 134 patients (72 %) are Grade I and 28 (15 %) Grade II what means 87 % of very good clinical outcome. Only six patients (all ruptured) were Grade IV/V. When we know the seriousness of the ruptured middle cerebral artery aneurysms, such results can be considered as very interesting.

Incidents and Complications :

26 technical incidents and/or complications were observed on 187 procedures : 17 during the endovascular approach and 9 during the post procedural week.

Among the per procedural complications, we find 3 aneurysmal sac ruptures (1,6 %), 8 thrombo embolic events (4,2 %), 5 strokes and 1 erratic coil migration. It is interesting to emphasize that all the aneurysmal sac ruptures were and remained asymptomatic without any worsening.

Post procedural complications : 4 rebleedings – 4 ischemic events – 1 hematoma related to the femoral puncture. Among the precocious rebleedings, we observed 2 deaths directly related to this complication.

Learning curve : The analysis of the complication rate shows that the maximum of complications has been observed during the first years of our experience, between 1992 and 1996. This first period was the beginning of the techniques of coiling; now the complication rate is dramatically reduced.

Conclusions :

The evolution of treatment indications of MCA aneurysms is very slow but certainly inescapable. This localization is reputed to be a poor indication of endovascular approach. The tridi angiography has really modified our possibilities allowing us a better understanding of angioarchitecture. Thanks to these technical improvements, the MCA aneurysms can be considered as an excellent indication for coiling allowing excellent anatomical and clinical results.