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THE COST OF MANAGEMENT OF INTRACRANIAL ANEURYSMS BY EMBOLIZATION IN MOROCCO

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Objectives

The overall prevalence of intracranial aneurysm would be between 0.5 to 6% of population, based on angiographic study or autopsy. The frequency of detection and treatment of these aneurysms has increased due to the greater use of diagnosis imaging non invasive techniques.

Development of these techniques has positively impacted the care of patients with hemorrhagic stroke. The problem that remains is the financial accessibility of the population to these techniques especially those not covered by a health insurance plan. In the latter case, the costs are catastrophic and worn out patients.

In this study, we aim to exhibit the cost of care by embolization of intracranial aneurysm and to understand relation between the cost and clinical parameters of patient (aneurysm volume, aneurysm neck size, number of coil…)

Methods and study design

Between January 2010 and April 2012, forty eight patients (48) were treated with embolization of cerebral aneurysms.

The cost was assessed by using the micro-costing method that takes into account all direct costs (hospitalizations, physician services, visits, paraclinical investigations, and medications).

The total cost was estimated by adding up the money spent for treatment modality. In other terms the calculation was based on ‘‘the fees of medical procedures’’ as defined by the General Nomenclature of Professional Acts (GNPA) published by the Moroccan Ministry of Health.

For drugs, the calculation was done by using the prices approved by the Moroccan Ministry of Health, and for medical devices, the prices used were those applied by our hospital.

Results

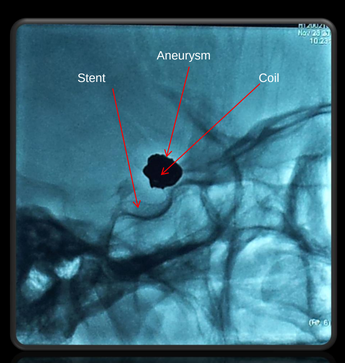
In total, 48 patients were treated, mean age 52.4 + / - 12.5 years. The sex ratio M / F = 0.71 and 26 patients were covered by health insurance (52.2%).

The median overall stay within 10 days [5 to 11], in ICU stay was 1 day [1 to 2] and medical unit stay was 6 day [3 to 9.75].

The overall average cost of treatment was 9 697.8 €, varying from 4 784.3 € to 32 172.3 €.

The cost of pharmaceutical products is 57.6% on average in the overall cost. While the average cost of consumables was 5 612.4 € with a range of 2 499.1 € to 16 370.8 €.

To summarize, the overall cost of care is influenced by the number of medical devices, by the size of aneurysm and the size of aneurysm’s neck. However length of stay, hypertension and smoking, and aneurysm localization do not affect the overall cost.



Discussion

In our case, cost of pharmaceutical products is a major handicap for the development of this technique (57% of overall cost), specifically the coils, balloons and stents. In Morocco, the prices of medical devices are not regulated by Ministry of health, they are free. Thus, the hospitals negotiate medical devices prices directly with suppliers.

In addition, the results of our study show that the overall cost of care is not influenced by the total length of stay or of hospitalization in the intensive care unit, since the cost of hospitalization is low compared to the consumable (136 € for a night of ICU versus 545 € for a single coil) and is not significant compared to the overall cost of patients care.

Although hypertension and smoking are recognized as risk factors in hemorrhagic stroke; they don’t influence the overall cost.

However, the correlation is statistically significant between the cost of consumables and the number of coils and other medical devices used, it is also significant between the cost of consumables (drugs and medical devices) and sizes of the aneurysm and its neck. These results are logic because the larger the size of the aneurysm, the greater the number of coils is important.

Also, the number of devices used is important in accordance to the neck size, the neuroradiologist is forced to use the occlusion balloon or stent, which implies a significant rise of costs incurred.

Conclusions

The cost of pharmaceutical products in the endovascular treatment of intracranial aneurysms remains high and represents a major handicap for the development of this technique in countries with low coverage by insurance health regimen.

Otherwise, for this act, the fee paid by Mandatory Health Insurance (MHI) (5,364 €) is only the half of the average full cost calculated in this series. The remaining co-payment is borne by patients. This is the second obstacle, in addition to the high cost of medical devices used, which hinders the development of this technique and its widespread adoption.

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