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Ischemic Stroke: Prevention is Key? Experience of the Intensive Care Unit at Moulay Ismail Military Hospital in Meknes, Morocco (Regarding 66 Cases)

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Abstract		Original Research Article

***Introduction*:** Cerebrovascular accident (stroke) is defined by a localized neurological deficit of sudden onset which persists for at least 24 hours. It is a frequent pathology whose social and economic burden remains very heavy. In Morocco, stroke is responsible for several thousand hospitalizations each year. Its estimated incidence would be 300 / 100,000 inhabitants. ***Objective of the study*:** Study the epidemiological profile, clinical and paraclinical aspects as well as preventive management associated with Ischemic stroke at the intensive care unit of Moulay Ismail military hospital. ***Method*:** Retrospective study carried out from January 1, 2019 to December 31, 2019. We collected 66 patients for whom all the parameters studied were collected on a pre-established operating sheet then entered into Microsoft Excel, and analyzed using the chi2 software. ***Results*:** The study concerned 66 patients, the mean age of the patients was 64.92 years (range 38 and 82) of which 63.6% of the patients were over 65 years old. High blood pressure was the main risk factor, followed by diabetes type 2 as most of the series described in the literature. The average time between the onset of symptoms and the emergency room visit was 66.2 hours. Hemiplegia was the main clinical sign found on examination. The brain scan q pathological in 93.9% of cases. None of our patients benefited from thrombolysis. The death rate has been estimated at 46.6%. Preventive measures have reduced the risk of stroke by 80%. ***Conclusion*:** our study shows the interest of prevention in reducing the frequency and morbidity – mortality of stroke.
Keywords: Ischemic Stroke - Risk Factors - Clinical Profile - Management - Prevention.

INTRODUCTION

A stroke is defined by a sudden onset of localized neurological deficit persisting for at least 24 hours [1]. According to the WHO, a stroke is characterized by the rapid development of clinical signs of focal or global brain dysfunction, lasting more than 24 hours, possibly leading to death, without an apparent cause other than a vascular origin [2]. It is a common pathology with a significant social and economic impact. In Morocco, stroke accounts for several thousand hospitalizations each year, with an estimated incidence of 300 cases per 100,000 inhabitants. It is the third leading cause of overall mortality in industrialized countries, following heart diseases and cancers, and the primary cause of acquired physical disability [3]. The last 20 years have witnessed major advances in the prevention, diagnosis, and management of strokes. Several risk factors, including hypertension, "embolic" heart diseases, atrial fibrillation (AF), diabetes, smoking, alcohol, and obesity, contribute to stroke occurrence. Other factors, such as age and gender, also play a role [4]. The coexistence of these factors can have synergistic effects, increasing the risk of stroke. Numerous studies have confirmed their role in the occurrence of ischemic stroke (IS). Despite the importance of acute phase management, prevention remains the most effective way to combat this disease, focusing on the screening and treatment of each risk factor. This study aims to determine the incidence of this pathology within the intensive care unit of Moulay Ismail Military Hospital in Meknes, Morocco, identify various predisposing factors

for cerebral ischemic pathology, assess patient outcomes, and highlight, through literature data, the importance of managing risk factors for preventing this severe condition.

MATERIALS AND METHODS

A retrospective study conducted from January 1, 2019, to December 31, 2019. We compiled 66 patients, with all studied parameters collected on a pre-established data sheet, then entered into Microsoft Excel and analyzed using the chi2 software.

RESULTS

The study included 66 patients with an average age of 64.92 years (ranging from 38 to 82 years), 63.6% of whom were over 65 years old. Females accounted for 56.06%, compared to 43.94% males, resulting in a sex ratio of 0.78. Hypertension was the main risk factor (45.4%), followed by type 2 diabetes (36.3%). 27.2% of patients were smokers. Alcohol consumption was observed in 1.5%. Dyslipidemia was noted in 12.1% of cases. Embolic heart diseases were found in only 13.6% of cases, and obesity was common among females, accounting for 12.1% of patients. The average time between the onset of symptoms and emergency consultation was 66.2 hours. Motor deficit was the main clinical sign (66.6%), followed by facial paralysis (54.4%), with aphasia and sensory deficit being less frequent. Brain CT was pathological in 93.9% of cases, with the middle cerebral artery territory being most affected (68.1%). Magnetic resonance imaging (MRI) was performed on 5 patients (7.57%). All patients were treated with antiplatelet agents and statins, and 86.3% received anticoagulants to prevent thromboembolic complications, while others received curative anticoagulation for embolic heart diseases. No patients in our series received thrombolysis, as they arrived beyond the therapeutic window, nor did any undergo thrombectomy. The mortality rate was estimated at 46.6%. Preventive measures can reduce the risk of stroke by 80%.

DISCUSSION

The average age of patients in our series is 64.54 years, similar to other studies such as Khoubach (64.9 years) [5] and Yonmadji (64.92 years) [6]. In our study, females represent 56.06% versus 43.94% males, with a sex ratio of 0.78, aligning with literature data [7]. Hypertension is the most common risk factor in our series (45.4%), close to national and African series. Diabetes was the second most implicated risk factor (36.3%), similar to Khoubach's series (38.7%), Bouthouri's (33.5%), and Anderson *et al*., (12.1%) [8]. Smoking was found in 27.2% of cases, doubling the risk compared to non-smokers. Alcohol consumption was seen in 1.5%. Dyslipidemia was present in 12.1% of cases, similar to Yonmadji (5.8%) [6] and Khoubach (12%) [5]. Embolic heart diseases were found in 13.6% of cases, similar to Khoubach (14.2%) [5] and Yonmadji

(15%) [6]. Obesity was more common among females (12.1%), exacerbated by associated risk factors. The delay between symptom onset and treatment initiation was too long, possibly due to a lack of awareness about the severity of the condition, delaying life-saving etiopathogenic treatment. The average Glasgow score in our series was 9.2, lower than Khoubach (9.8) and Bouthouri (13.96), with the Glasgow score being the most reliable neurological parameter for mortality. The severity of consciousness impairment predisposes to a fatal outcome in ischemic strokes [9]. The motor deficit was the primary sign (66.6%), followed by facial paralysis (54.4%), with aphasia and sensory deficit being less common, consistent with literature data. Brain CT was pathological in 93.9% of cases, with the middle cerebral artery territory being most affected (68.1%), similar to Khoubach's study [5]. MRI was performed in 5 patients (7.57%), close to Yonmadji's series (5%) [6]. General therapeutic measures are crucial, including neurological monitoring, oxygen saturation monitoring, blood glucose, temperature, and blood pressure management, and prevention of thromboembolic complications. All patients in our series received antiplatelet agents (100%), higher than Khoubach's series (76%) and Yonmadji's (57%) [5, 6], reducing the risk of thrombotic events (cerebral infarction, myocardial infarction) by 25% after IS or transient ischemic attack (TIA) [10]. All patients were on statins (100%), compared to 41.3% in Khoubach's series [5], with stroke risk reduction proportional to the decrease in LDL cholesterol levels. 86.3% of patients received anticoagulants to prevent thromboembolic complications, with others receiving curative anticoagulation for embolic heart diseases. No patients in our series received thrombolysis due to late presentation, compared to 1.94% in Yonmadji's series [6]. No patients underwent thrombectomy. The mortality rate was 46.6%, compared to 52% in Khoubach's series [5], 31.3% in Alonso *et al*., [11], 3% in Yonmadji [6], and 30.9% in Abjaw [12]. In our study, 51.5% of patients had sequelae, such as gait disturbances, language disorders, and epilepsy, primarily due to delayed consultation.

> ➢ **That's why the essential work must be done upstream!**

Patient awareness: Downstream, the management of ischemic cerebrovascular accidents (ICVA) is the responsibility of the hospital neurologist, the emergency physician, and the intensivist, but unfortunately, it's often too late. This is why patient awareness must be done upstream. Indeed, any patient presenting at least one modifiable cardiovascular risk factor (hypertension, diabetes, hyperlipidemia, obesity, sedentary lifestyle, alcohol, hormone replacement therapy, oral contraception, drugs, sleep apnea syndrome…) must ensure strict control of it. This obviously involves regular follow-up consultations with the primary care physician, good therapeutic adherence, and compliance with instructions.

Physician awareness: Regardless of their specialty and level of involvement in the management of this type of patient, every physician must constantly warn their patient of the consequences of total or partial neglect in controlling their risk factors. The recommendations for treating these are summarized and simplified in the table below:

Antithrombotic	Aspirine 75 à 325mg/J ou Clopidogrel 75 mg/j
Arterial pressure	Objective < 140/90mmHg
Diabetes	- Objective hemoglobin A1c < 8 if history of stroke or TIA < 6 month. - Objective < 7 if antecedent of stroke > 6 month.
Tabacco	Smoking cessation recommended.
Alcohol	-Reduction or cessation of consumption in men consuming more than 3 VS per day and in women consuming more than 2 VS. -Withdrawal in alcohol dependents.
obesity	Recourse when BMI >25
lipid	Treatment with statin if LDL-cholesterol >1g/l and systematic if diabetic patient or coronary history.

Every physician must correctly treat non-valvular atrial fibrillation (with vitamin K antagonists or direct oral anticoagulants). Carotid surgery is recommended for patients with a stenosis of 70 to 99% who have had a recent transient ischemic attack (TIA) or a non-disabling recent infarction in the ipsilateral territory. The physician's role also includes raising patient awareness about the warning signs of transient or established cerebral ischemia. Patient and general population education is an essential prerequisite through awareness campaigns on radio and television, and the establishment of various neuro-intensive care structures has become a priority.

CONCLUSION

Ischemic strokes (IS) are a major public health issue due to their frequency and morbi-mortality. This pathology affects one person every five seconds globally, with the WHO predicting an increase in IS incidence from 16 million in 2005 to 23 million in 2030. Its management should be a public health priority, considered an urgent diagnostic and therapeutic situation. Despite the importance of acute phase management, prevention remains the most effective way to combat this disease through screening and treating each risk factor. In our study, the management delay was too long, possibly due to a lack of awareness about the condition's severity, delaying life-saving etiopathogenic treatment. Educating the population to recognize early IS signs, emergency consultation, and establishing various neuro-reanimation structures are essential to change the prognosis of this pathology.

BIBLIOGRAPHIES

1. Leys, D., & Pruvo, J. P. (2002). Stratégie pratique en urgence face à un accident vasculaire cérébral. *Encycl Méd Chir neurologie*, *7*, 1-10.
2. Bourrier, P., Boulliat, J., & Haeutot, J. M. (1997, April). Les accidents vasculaires cérébraux dans les services d'accueil des urgences. In *Conférence de Consensus, Nice le 4 Avril 1997*.
3. Lopez, A. D., Mathers, C. D., Ezzati, M., Jamison, D. T., & Murray, C. J. (2006). Global and regional burden of disease and risk factors, 2001: systematic analysis of population health data. *The lancet*, *367*(9524), 1747-1757.
4. Adoukonou, T. A., Vallat, J. M., Joubert, J., Macian, F., Kabore, R., Magy, L., ... & Preux, P. M. (2010). Prise en charge des accidents vasculaires cérébraux en Afrique subsaharienne. *Revue neurologique*, *166*(11), 882-893.
5. Khoubache, Z. (2018). Les accidents vasculaires cérébraux ischémiques en milieu de réanimation: aspects épidémiologiques et pronostiques. THÈSE PRESENTEE ET SOUTENUE PUBLIQUEMENT LE 22/06/2018 [15].
6. Youmadji Ndigue, N. (2016). Prise en charge des accidents vasculaires cérébraux ischémiques au service de neurologie du CHU hassan 2 FES (a propos de 1184 cas) Année 2016, These 109/16.
7. Gombet, T., Ossou-Nguiet, P. M., & Ampion, M. O. (2012). Facteurs de mortalit. des accidents vasculaires c.r.braux au CHU de Brazaville. Jnlf Nice; 2012.
8. Andersen, K. K., Andersen, Z. J., & Olsen, T. S. (2011). Predictors of early and late case-fatality in a nationwide Danish study of 26 818 patients with first-ever ischemic stroke. *Stroke*, *42*(10), 2806-2812.
9. Soria, L. V., Iglesias, L. M., Amor, L. L., Hidalgo, I. A., García, R. R., Espina, L. F., ... & Augusto, D. E. (2018). Resultados y evolución funcional de pacientes críticos con ictus isquémico sometidos a trombectomía mecánica. *Medicina Intensiva*, *42*(5), 274-282.
10. Hofmeijer, J., Kappelle, L. J., Algra, A., Amelink, G. J., van Gijn, J., & van der Worp, H. B. (2009). Surgical decompression for space-occupying cerebral infarction (the Hemicraniectomy After Middle Cerebral Artery infarction with Life-threatening Edema Trial [HAMLET]): a multicentre, open, randomised trial. *The Lancet Neurology*, *8*(4), 326-333.
11. Alonso, A., Ebert, A. D., Kern, R., Rapp, S., Hennerici, M. G., & Fatar, M. (2015). Outcome predictors of acute stroke patients in need of intensive care treatment. *Cerebrovascular Diseases*, *40*(1-2), 10-17.
12. Zakaria, A. (2010). Prise en charge des accidents vasculaires cérébraux ischémique en milieu de réanimation HMA thése de medecine 2010.