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STUDY OF AGE INFLUENCE AND POST-STROKE EVOLUTION

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Abstract

The annual incidence of the cerebrovascular accident increases with age (from 1:1000 individuals for ages 40 to 45 and from 20:1000 for ages 75 to 84). The incidence of deaths caused by cerebrovascular accidents increases exponentially, with age. The elder person exhibits particularities of the cardiovascular system and of the drugs' pharmacokinetics.

The cardiovascular receptiveness to beta-stimulators decreases with age. This is manifested by the reduction of the cardiac izotropism, frequency and by vasodilatation.

Diabetic neuropathy is the most common complication of diabetes, affecting about 65% of people who suffer from diabetes. Unfortunately, diabetic neuropathy is underdiagnosed, so that its progression, if not controlled, can cause serious health consequences. Diabetic neuropathy affects one or more nerves and is manifested by various signs and symptoms, of which the most common are paraesthesia and pain.

People who suffer from diabetes should routinely perform regular routine checks and learn about methods to prevent complications, especially diabetic neuropathy. Although this type of complication is difficult to evaluate and treat, early diagnosis is extremely important.

Key words: Cerebrovascular accidents, cardiovascular system, vasodilatation, beta-stimulators, risk factor

INTRODUCTION

Today, isolated systolic hypertension is recognized as an important risk factor for cardiovascular and cerebrovascular diseases (Launer 2000) et al. The elderly have a distinct feature of the carotid sinus which, due to the endothelial dysfunction phenomena, atherosclerosis, can result in unpredictable reactions. (Di Carlo et al., 2000)

Most elderly patients exhibit a fibrosis of the carotid sinus, with a possible increase of the blood pressure values as a side-effect, due to incapacity of the baroreceptors to record the blood pressure exerted on the elastic structure from the mid-segment of the carotid arteries. (Di Carlo, 2009, Evers 2012 ,Feign V.,2003,Golstein L. B. et al., 2006)

There are also patients in whose case one can notice an over-reaction of the nervous system's defense against the high blood pressure

values, and the decreased heart rate and low blood pressure – secondary side-effects of this reaction – may trigger ischemic phenomena in the cortex, perturbing the cerebral perfusion rate (Schimtt, et al., 2000)

The elderly show particularities of drug pharmacokinetics (Wolf P.A. et al, 2000). A greater susceptibility of the elderly, to the side-effects of antihypertensive medication, has been noticed; of these, we should especially like to point out hypotension. (Nakayama et al,1994)

The cerebrovascular accident, as a complication of an aggressive antihypertensive treatment, is a proven fact that needs to be recognized and prevented (Petty G. et al, 1998).

Advanced age has been shown to be an independent risk factor that influences short-term mortality in the medium and long term after an ischemic stroke (Alter et al, 1987).

Stroke mortality rate is highest in people ≥75 years old, (6) but the reason for this high mortality rate is unknown (Sturm J. W. et al, 2004).

In order to elaborate a proper prevention plan for the cerebrovascular accident in the elderly, it is necessary we know the main risk factors which influence the generation of a cerebrovascular accident, in the case of this age group (Goldstein, L. B. et al, 2006).

The antihypertensive prophylactic treatment should be adapted to each disease in particular and custom-tailored in accordance with the pharmacokinetics of antihypertensive medication in the elderly (Rothwell P. M. et al, 2005).

Hypotension is a precipitating factor of a cerebrovascular accident, especially in the case of the elderly with cerebral arteriostenosis Hypertension is no longer the main risk factor for cerebrovascular accidents in patients over 70 years of age (Rojas J. I. et al, 2007).

MATERIAL AND METHOD

Great importance is given to the blood pressure oscillations and instability, especially the systolic one, in diagnosing cerebral circulatory disorders in the elderly.

A three year, retrospective study has been performed, through which patients diagnosed with various forms of cerebrovascular ischemic accidents were divided into categories, depending on the risk factors which they exhibited; thus, three study groups were formed.

Group A was comprised of 150 patients, diagnosed with CVA-AIT who did not exhibit any major cardiovascular risk factors; group B was comprised of 150 patients, diagnosed with CVA-AIT, who exhibited major cardiovascular risk factors, especially atherosclerosis; group C was also

comprised of 150 patients, diagnosed with CVA-AIT, who had CVA-AIT in their medical history.

RESULTS AND DISCUSSION

All these patients were examined via Doppler ultrasounds at the level of their carotid sinuses; their retinal arteries were also examined, in order to evaluate the vascularization of the sylvian territory.

The table below sets up the study group that performed the clinical examinations according to age and the major risk of cardiovascular disease.

Table 1.

Patient groups study: grorup A,B and C

	Group A	Group B	Group C
Age average	56,3±4%	63,3±3,5%	67,3±5,2%
Mean BP values	147/95±4	154/98±3	187/99±5
Mean LDL values	130±7 mg/dl	189±18 mg/dl	267±17 mg/dl
Mean HDL values	50±18 mg/dl	85±12 mg/dl	76±22 mg/dl
Carotid Intima/Media values	0,65±0,14	0,94±0,17	1,11±0,4
Retinal evaluation			
Stage I	39,33%	19,33%	9,33%
Stage II	31,33%	30,00%	30,67%
Stage III	21,33%	34,67%	38,67%
Stage IV	8%	16%	21,33%

The percentage of the study group by age and sex is shown in the figure below

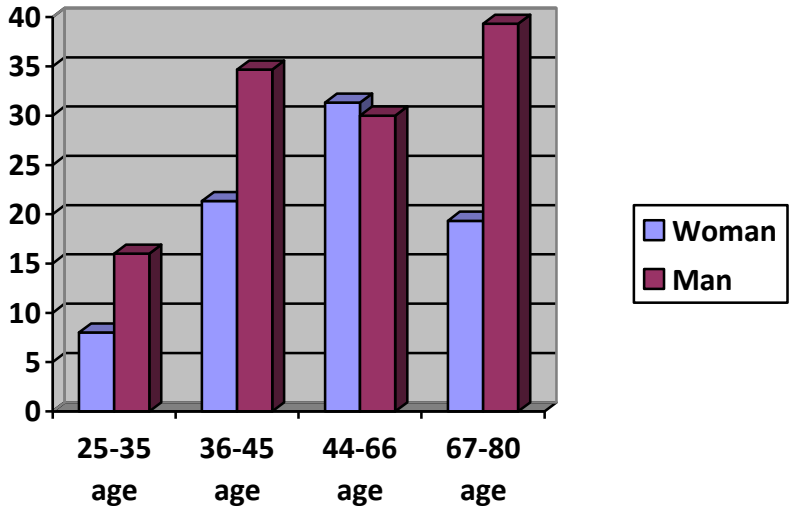

Fig.1. Repartition by sex

Focal neuropathy affects the nerves in one area. Focal neuropathy is often a cause of problems with the stomach, eyes, facial muscles, ears, pelvis and lower back, chest, thighs, legs. It usually occurs suddenly, or unpredictable, but can be cured without causing long-lasting effects.

Especially focal neuropathy can cause vision problems: double vision, pain behind the eyes, but also a type of facial paralysis called Bell paralysis.Such a case is represented in the figures below

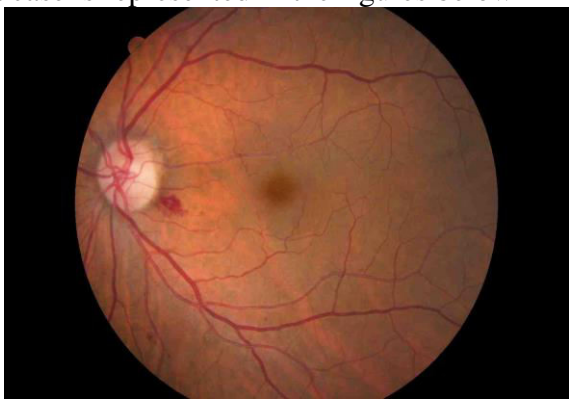

Fig. 2. Patient with diabetic neuropathy, Group B, male, aged 61, left eye

Fig. 3. Patient with level IV hypertension, Group C, female, aged 66

It was found that most cases from Group A likely suffered a thromboembolism – due to the chronic venous insufficiency in their lower limbs – as possible etiology of their AIT/CVA. In the case of Group B, an increase in the CVA incidence has been noticed, directly proportional with the intima/media and LDL cholesterol report values. In the case of Group C, the first thing we noticed was a poor management of the dyslipidemia, of the type II diabetes and of the hypertension.

CONCLUSIONS

One cannot quantify the risks of frequent interruptions in the medication treatment; however, we have noticed that these patients require a much longer hospitalization period, their recovery being very slow-paced.

Even though it is not part of the current study, we were curious what causes the frequent interruptions of the antihypertensive and anticoagulant/antiplatelet therapy. In 65,17% of cases, the Group C patients that the reason was their socio-economic status.

The advanced age of the studied patients is associated with structural cardiopathies and arrhythmias, a source of major, unstable lesions of the cervicocranial arteries.

The possibility of efficient prevention is important, by identifying the cardioembolism sources and grading the risk factors, in order to define the optimal antithrombotic medication and to reduce the CVA.

REFERENCES

1. Allender, S. et al. European cardiovascular disease statistics 2008. British Heart Foundation statistics website [online], http://www.heartstats.org/temp/ ESspweb08spchapter.12.pdf (2009), pp. 32-37.
2. Di Carlo, A., 2009, Human and economic burden of stroke. Age Ageing 38, pp. 4-5
3. DiCarlo, A, Launer, LJ, Breteler, MMB et al. 2000, Frequency of stroke in Europe: a collaborative study of population-based cohorts. Neurology.; 54: pp. 28–33.
4. Evers, S. M. et al. International comparison of stroke cost studies. Stroke 2012,35, pp. 1209-1215.
5. Feigin, V. L., Lawes, C. M., Bennett, D. A. & Anderson, C. S. 2003, Stroke epidemiology: a review of population-based studies of incidence, prevalence, and case-fatality in the late 20th century. Lancet Neurol. 2, pp. 43-53.
6. Goldstein, L. B. et al. 2006, Primary prevention of ischemic stroke: a guideline from the American Heart Association/American Stroke Association Stroke Council: cosponsored by the Atherosclerotic Peripheral Vascular Disease Interdisciplinary Working Group; Cardiovascular Nursing Council; Clinical Cardiology Council; Nutrition, Physical Activity, and Metabolism Council; and the Quality of Care and Outcomes Research Interdisciplinary Working Group: the American Academy of Neurology affirms the value of this guideline. Stroke 37, pp.1583-1633
7. Launer, LJ and Hofman, A. 2000, Frequency and impact of neurologic diseases in the elderly of Europe: a collaborative study of population-based cohorts. Neurology.; 54: pp.1–3
8. Murray, C. J. & Lopez, A. D., 1997. Global mortality, disability and the contribution of risk factors: global burden of the disease study. Lancet 349, pp. 1436-1442
9. Nakayama, H, Jørgensen, HS, Raaschou, HO, and Olsen, TS. 1994, The influence of age on stroke outcome: the Copenhagen Stroke Study. Stroke; 25: pp. 808–810
10. Petty, GW, Brown, RDJ Jr, Whisnant, JP, Sicks, JD, O'Fallon, WM, and Wiebers, DO. 1998, Survival and recurrence after first cerebral infarction: a population-based study in Rochester Minnesota,. Neurology. 1998; 50: pp. 208–216
11. Rojas, J. I., Zurrú, M. C., Romano, M., Patrucco, L. & Cristiano, E., 2007, Acute ischemic stroke and transient ischemic attack in the very old—risk factor profile and stroke subtype between patients older than 80 years and patients aged less than 80 years.Eur. J. Neurol. 14, pp. 895-899 .
12. Rothwell, P M. et al. 2005, Population-based study of event-rate, incidence, case fatality, and mortality for all acute vascular events in all arterial territories (Oxford Vascular Study).Lancet 366, pp. 1773-1783.
13. Sacco, RL, Shi, T, Zamanillo, MC, and Kargman, DE. 1994, Predictors of mortality and recurrence after hospitalized cerebral infarction in an urban community: the Northern Manhattan Stroke Study. Neurology; 44: pp. 626–632
14. Schmitt, R, Breteler, MMB, Inzitari, D et al. 2000, Prognosis with stroke in Europe: a collaborative study of population-based cohorts. Neurology. 54: pp. 34-37
15. Strong, K., Mathers, C. & Bonita, R. 2007, Preventing strokes: saving lives around the world.Lancet Neurol. 6, pp. 182-187.
16. Sturm, J. W. et al. 2004, Quality of life after stroke: the North East Melbourne Stroke Incidence Study (NEMESIS). Stroke 35, pp. 2340-2345.
17. Wolf, PA, D'Agostino, RB, Belanger, AJ, and Kannel, WB. 1997, Probability of stroke: a risk profile from the Framingham Study. Stroke. 22: pp. 312–318