

CEREBROVASCULAR ACCIDENTS - PUBLIC HEALTH ISSUE

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Abstract: Cerebrovascular accidents represent a major public health problem of the population at the global level and one of the most threats addressed to the human society at present but also in the future. The cerebrovascular accident (CVA) involves important financial and bio-psycho-social problems. However, the cerebrovascular accident is one of the disorders with the greatest prevention degree because it has many changeable risk factors, common to those of other cardiovascular diseases and well studied interventions which offer a prevention opportunity.

Cuvinte cheie: accident
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prevalența

Rezumat: Accidentele vasculare cerebrale reprezintă o problemă majoră de sănătate a populației la nivel mondial și una dintre cele mai mari amenințări la adresa societății umane în prezent, dar și în viitor. Accidentul vascular cerebral (AVC) implică importante probleme financiare și bio-psiho-sociale. Totuși, atacul cerebral este una din afecțiunile cu cel mai mare grad de prevenire pentru că are mulți factori de risc modificabili, comuni cu ai altor boli cardiovasculare și intervenții bine studiate care oferă o oportunitate de prevenire.

The cerebrovascular accidents (CVA) represent the third cause of morbidity and mortality in Europe and U.S.A. (after the ischemic heart disease and cancer), and in Romania, according to WHO statistics, it is situated on the first place, both in what concerns mortality and major invalidity.(1)

This category of diseases results from disorders of the cerebral arterial circulation, having three main clinical forms: the thrombosis and the cerebral embolism which generate ischemia-infarction, and the cerebral haemorrhage.(2) Most of the cerebrovascular diseases feature a brutal debut, with focal neurologic deficit. The deficit may remain constant, it can rapidly ameliorate or it may progressively aggravate. This sudden debut of a non-convulsive neurologic deficit is known as stroke, cerebrovascular accident or apoplexy.(6,7) Ischemia and the cerebral infarction constitute 85-90% of the strokes, while 10-15% of them are intracranial haemorrhages.(2) The cerebrovascular diseases are predominant in the middle and late period of life. But, unfortunately, the vascular disorders appear earlier and earlier, belonging rather to the middle age and sometimes to the young one.(3)

In developed countries, the number of vascular disease cases is in continuous development, this, on the one hand, because of the high frequency of atherosclerosis and hypertension (the main causes generating the cerebrovascular disease), as well as, on the other hand, of the prolongation of the average lifespan of the modern society humans, favouring the occurrence of a CVA on the background of vascular sclerosis accentuated by the age. The annual incidence of CVA and mortality decreased considerably during the last years due especially to the recognition and treatment of arterial and heart diseases incriminated, including that of the hypertension, as well as of the efforts carried out for the control of risk factors.(3,4,5).

By the CVA morbidity study, there are highlighted some issues related to the implications of the cerebrovascular pathology and its relationship with the general morbidity structure by its causes.(8) For the evaluation of CVA morbidity, there are used incidence and prevalence indicators, considered as the most important epidemiometric parameters in the medical and social researches of these illnesses.

The information sources necessary for the morbidity study are represented by the results registered during the actual consultations, carried out in ambulatory or hospitalization conditions, the periodic reporting and statistical bulletins, the complex medical investigations. For the real knowledge of the health status of the population and the development of the medical act granted, it is important that all the data be recorded in the unique medical record.(9) However, these informational sources do not reflect completely the reality (10), because, on the one hand, the biological-medical characteristics of these diseases are dominated by an insidious evolution, with a subjective symptomatology, absent or unpolished and non-characteristic, and, on the other hand, by the deficiencies of the sanitary system.

The incidence is defined (11) as the frequency of new CVA cases recorded in a certain territory and a certain period of time (month, trimester, year) by all the medical units. Since 1987, the declaration of the new confirmed diseases by means of the declaration record (communication of the chronic diseases) is mandatory, both by the hospital and the ambulatory units. Within the incidence calculation, CVA appears only once as “new case” – at diagnostic.

In the specialty literature, it is considered that the incidence or frequency of the new CVA illness cases of the population is influenced by three elements: accessibility, addressability and the quality of the diagnosis (13). If these three

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conditions are optimal, WHO considers that the morbidity weight which remains unknown by the incidence study may be from 10% up to 25%.(13)

The incidence study is very important when information which surpasses the limits of the study method for which it was created is not expected. It serves as working instrument for the physician who diagnoses and establishes the individualized treatment, grants sick leaves for temporary incapacity, and as dynamic study of the cases in order to establish appropriate measures, in case of an inappropriate dynamics.(14,15) At the level of health care, the comparative study of the units similarly classified, with a similar population, as the comparison in time of the CVA incidence, represents an important method for the knowledge of the efficiency of health care service activity.

At a global level, there are clear differences in the CVA mortality incidence between Japan and America, between the Eastern Europe and Western.(15) CVA incidence and the mortality rates also vary between the race groups. Compared to white people, black people are two times more predisposed to CVA death.(16)

Asian people, especially Chinese and Japanese people, have high CVA incidence rates.(17) During the most part of this century, CVA incidence and the Japan mortality rates were very high, exceeding those of heart diseases. As in the USA, the CVA death rates in Japan diminished dramatically after the Second World War. During the last years, the CVA incidence rates in Japanese men from Hawaii were similar to those of white American people, as well as the rates of Japanese men from Japan, compared to those from California.(18)

In Europe, CVA incidence varies from country to country, being estimated between 100 and 200 new cerebrovascular accidents at 100,000 inhabitants yearly, which represents a huge economical burden. Romania is placed among the first ten places in the world in what concerns the incidence of the cerebrovascular accident (CVA).

As regards the age, the statistical studies demonstrate the fact that the maximum incidence of the vascular accidents appear in 75% of cases over the age of 65 years old (19; 20), age also associated with a much more difficult post- cerebrovascular accident recovery.(21,22,23)

The CVA morbidity prevalence (global frequency) defines the totality of patients with different types of CVA that exist at a certain "critical" moment (the last day of the trimester, semester, year) or within a certain period of time (trimester, semester, year).(8) The prevalence refers to all the illnesses existing at a certain moment, or within a certain period of time, regardless the tracking date. The prevalence is calculated separately, according to each disease, representing the totality of new and old illness cases.

The prevalence calculation has a much higher value than the incidence calculation, because the last may represent very high variations at different moments and for various causes. For the CVA prevalence knowledge, different sources are combined (consultations, complex medical investigations, declaration records, etc.).(9) In case of CVA prevalence, the calculation must also be made according to age, because these diseases appear generally in adults and are accentuating in elders. The exact prevalence knowledge requires a mass medical examination.

More recent data on the CVA prevalence in Romania appear in a study elaborated by a group of authors from Bucharest.(24) They show that the CVA prevalence is of 0.1% for the age group under 40 years old, 1.8% for the age group between 40 and 55 years old, 4.3% for the age group between 55 and 70 years old and 13.9% for the age of over 70 years old.

There were not signalled significant differences between the urban and rural environment.

CVA implies important and great financial and bio-psycho- social problems, being one of the most serious issues health issues in the world. Even if, compared to the cardiovascular diseases, the CVA prevalence is much lower, the severity is given by the fact that the patients who survive a cerebrovascular accident have often persistent symptoms such as: the paralysis of some motor functions, sensorial deficits, perception, balance deficits, aphasia, depression, dementia or other alterations of the cognitive functions.(25,26,27) The cerebrovascular accidents represent the main etiologic factor of the instalment of long-term disabilities, in developed countries representing the third death cause after the heart diseases and different types of neoplasms.(25,28) Moreover, CVA represents the second cause of dementia occurrence and the most frequent cause of epilepsy in elders, as well as a frequent cause of depression.(20,29)

The disability-adjusted life years (DALYs) can be defined as the sum of the years lost in front of premature death and the years lived with adapted disability.(31)

The stroke is the fourth cause of DALY around the world, and a growth from 50.8 in 2005 to 60.9 in 2030 is envisaged.(32) DALY balance may be higher in developing areas of the world. For example, the CVA rate among the people aged between 30 and 69 years old may be 5 to 10 times higher in countries such as Russia, India, China, Pakistan or Brazil, compared to the United Kingdom of Great Britain or USA. A decrease by 2% of the mortality rate caused by the chronic diseases might lead to the avoidance of approximately 6.5 million deaths caused by the stroke until 2015.(33)

The cerebrovascular accident is costly. The average hospitalization duration is of 28 days, but there is a considerable variation. One of five acute beds and one of four chronic beds are occupied by the CVA patients, and along with the aging of the population, it is presupposed that these numbers shall increase. At a global level, it is estimated that the stroke absorbs 2-4% of the health service costs, in the developed areas the costs exceeding 4%.(32) The estimated costs for strokes vary according to each country.

In the United Kingdom of Great Britain, most of the CVA health care services are provided by the geriatrics in stroke units, geriatrics divisions, ambulatory or residential care homes. The development of a separate supra-specialty for the CVA was an important issue in the development of the disease awareness degree among health care professionals. The United Kingdom National Audit Office report, published in 2005, showed that the global CVA cost for the society is of approximately 7 billion pound sterling per year, of which 2.8 billion are the direct medical aid costs, compared to only 1.9 billion for the coronary artery disease. Most money is spent on diagnosis and hospitalization, namely 590 million pound sterling, the ambulatory costs being of only 46 million. The costs related to ambulatory medicines are very high, namely 507 million, however being highly exceeded by the costs related to the community health care services, including the institutional health care services that are up to 1.7 billion pound sterling. The cost of informal health care services was estimated to 2.4 billion pound sterling, and the indirect costs (loss of incomes and payment of benefits) to 1.8 billion pound sterling.(34)

A comparison between some developed countries showed, based on the costs from the middle of the 90's, that in Great Britain there were spent 7.6 billion pound sterling, Australia spent 1.3 billion Australian dollars and the USA spent 40.9 billion dollars, which means approximately 100 dollars per inhabitant per year.(31) Moreover, the more recent estimations

from the USA indicated in 2008 the total direct and indirect costs related to CVA to approximately 65.5 billion dollars.(35)

In what concerns mortality, it is estimated that the stroke represents the cause of 9% of deaths and that it is the second cause as importance of the world mortality.(31,32) There are geographical variations related to the CVA mortality rate. These differences are from one country to another, but also within the same country, according to one region to another.

For the moment, the number of deaths generated by stroke is estimated to 5.7 million, number which is expected to increase to 7.8 million up to 2030.(32) Most part of mortality caused by stroke (87%) is forecasted to appear in the countries with a low and medium income. An increase of deaths caused by stroke in the developing areas indicates an increase of mortality caused by stroke in almost 50% of the total of deaths from the last decade.(32) These tendencies may be attributed to the aging of the population and to the changes in the profile of the risk factors of cardiovascular diseases which lead to these premature deaths.

In the case of the persons aged between 45 and 55 years, the mortality rate is four-five times greater for Afro-Americans than for the white people, the difference diminishing along with aging.(36) However, under certain conditions, race - related CVA risk may be correlated with environmental factors or inherited risk factors, others than the race. In the National Health and Nutrition Examination Survey, USA, the mortality rate for black people, compared to white people, decreased from 2.3 to 1.9 when it was adjusted for six well established risk factors and it decreased from 1.9 to 1.4 when it was further adjusted for family incomes.(37) Thus, the 38% percent, representing a greater CVA mortality in black people, could be explained by six risk factors and by the family incomes. The epidemiologic studies of the Hispanics from the USA are prejudiced from the beginning by the diversity and heterogeneity of the origin of groups. However, the CVA mortality rates were similar in Hispanics and white people younger than 65 years old and lower in those over 65 years old. This can be changing: in New Mexico, between 1958 and 1987, Hispanics had lower CVA mortality rates than the white people, but in the last 5 years, the rates increased.(16) In a cohort study carried out within the hospital and the community on all primary CVA cases, in the North of Manhattan, black people and Hispanic people had a global weight, adjusted by age, of the CVA incidence rate of 2.4 times and respectively 1.6 times greater, than that of white people.(38)

CVA was a cause of death among Native Americans in 1990, but the death rates were lower than in white people.(39) Since 1988 and up to 1990, the CVA mortality rate was similar in Amerindians and white people younger than 65 years old, and, as in Hispanics, lower in white people over 65 years old.

During the last years, there was recorded an increase of tobacco consumption, the use of unhealthy diets that lead to obesity and the decrease of physical activity among populations in general, worrying tendencies that led to an appeal towards a global purpose to reduce CVA mortality.(32) It is estimated that two other percentages of decrease of annual deaths caused mainly by stroke may be reached each year by a better treatment and a management of cases.

Under the circumstances of urbanization and industrialization intensification, of a rapid modernization, of the increase of the standard of living and the increase of life expectancy, it is expected that the morbidity and mortality by cardiovascular diseases, cerebrovascular respectively, to further maintain its high values.

However, the stroke is not an accident, as the archaic term of "cerebrovascular accident" might make us think. On the

contrary, there are risk factors defined and an induction or a latent period which usually precede the majority of the strokes. Moreover, the sequelae of the stroke are not without significance, because death or the permanent neurological disorders are a common issue, and the costs are considerable. In USA, for example, it is estimated that there appear about 150 000 deaths caused by stroke each year; 26% of survivors of strokes reach in specialized institutions 6 months after the stroke; 15-30% are permanently affected and about 65.5 million dollars are spent for this disease, directly or indirectly.(35)

However, the stroke is one of the disorders with the most high prevention degree because it has a lot of changeable risk factors, common to other cardiovascular diseases and well-studied interventions which offer a prevention opportunity.(40)

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