KNOWLEDGE ABOUT STROKE AMONG NON-STROKE PATIENTS

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SUMMARY – The aim of the study was to evaluate the knowledge among patients at non-neurologic wards about the risk factors for stroke, warning signs, and initial actions that must be taken when a stroke occurs. Data were collected from 75 inpatients suffering from a range of diseases, mean age 49.57±14.87 years. Study subjects were asked to fill in a standardized questionnaire containing 46 questions subdivided into two sections. The answers concerning warning symptoms, risk factors, causes of stroke, and initial action were quasi-quantified according to an arbitrary scoring system. Of 75 patients, only 5.3% were not aware of any medical risk factor, and 12% were not aware of any warning signals. On the other hand, only 2.6% and 10.66% of subjects listed correctly all risk factors and warning signs, respectively. Anyhow, many patients gave wrong answers. Most respondents (89.54%) would choose a desirable action if stroke was suspected. The scores for knowledge about stroke were better among higher educated respondents and among women. The factors such as belonging to a high-risk group for stroke, age, and other characteristics did not influence the score. Family, friends, and mass media provided major sources of the patients' knowledge. It is concluded that, despite the fact that the respondents knew a lot about stroke, the nature of stroke and the problems involved often caused confusion or misunderstanding. Further public education is needed to increase the awareness of the warning signals and risk factors, especially among patients who are at an increased risk of stroke.

Key words: *Cerebrovascular disorders, prevention and control; Knowledge; Awareness; Attitudes; Population; Surveillance*

Introduction

Stroke is a condition jeopardizing life and, as such, should be regarded as requiring immediate inpatient treatment and immediate implementation of specific medical procedures, in accordance with well defined principles[1,2]. One of the crucial factors clearing the way to the option of fast and efficient specialist intervention is, whether the patients and/or their families are capable of recognizing the warning signals in case of stroke[3]. Therefore, public education regarding the issues related to stroke has become a priority task of the National Programme for Stroke Prevention and Treatment[1]. Introducing educational activities should be, nonetheless, preceded by recognition of the current awareness of what stroke is among the general public. In view of the lack of pertinent reports in the Polish literature, we decided to conduct the present study.

The study was aimed at the assessment of the knowledge and awareness among patients at non-neurological wards of the risk factors, sources, basic symptoms of stroke, and procedure in case such symptoms occur. The assumption also was to try to identify the factors differentiating the level of knowledge in the study group.

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Patients and Methods

The procedure and study subjects

The study was carried out at the Voivodeship (Regional) Central Hospital in Poznan, and at the Specialist Hospital in Pila. The main criteria for including the patients in the study were their acceptance of participation and their clinical condition enabling them to personally fill in the questionnaire. In order to increase the homogeneity of the sample, the subjects reporting to have previously suffered a stroke were excluded.

The study included 75 inpatients (39 males and 36 females), age range 16 – 81 (mean age 49.57±14.85) years. Most patients lived in cities or towns (61%) and had basic vocational or secondary school education (67.99%) (Table 1). Thirty-nine (52%) patients were clinically di-

Table 1. Demographic and social characteristics of study subjects (n = 75)

Characteristic	n	%
Age (yrs)		
16-50	40	53.33
51-60	19	25.33
61-70	8	1.07
>70	8	1.07
Sex		
Male	39	52.00
Female	36	48.00
Education		
Primary	12	16.00
Basic vocational	26	34.67
Secondary	25	33.34
University	12	15.99
Area of residence		
City/town	46	61.33
Small town	9	12.00
Village	20	26.67

agnosed to suffer from conditions recognized as risk factors for stroke, with one risk factor present in 23, and two or more factors in 16 patients (Table 2). Nearly a half, i.e. 34 (45.33%) patients had a family member with a history of stroke.

Table 2. Awareness of risk factors for stroke in study patients

Risk factor awareness	n	%
Clinical		
Heart diseases	21	28.00
Hypertension	18	24.00
Diabetes	3	4.00
High cholesterol	20	26.67
Life style		
Physical inactivity	36	48.00
Smoking	20	26.66
Obesity	5	6.67

Instrument

The study was performed using a questionnaire comprising 46 questions divided into two sections. The first section included questions on demographic data, presence or absence of stroke risk factors, and patient's general health habits. The second section tested the awareness of stroke risk factors, warning signs, and knowledge of rules of behavior if such warning signals should occur.

The questions included in the second section were put into a framework of a true/false test. Every task included correct answers and a number of distractors. The patient could score 1 point for choosing the right answer, -1 point for choosing a wrong answer, and 0 point for giving no answer at all. The score ranged from -18 to 28 points. In order to omit negative values, a figure equal to the absolute value of the lower limit of the score was added to the points scored for individual questions, and to the total score in the test. Finally, the patient could score between 0 and 46 for the complete test. Internal consistency of the sets of questions was checked by means of Cronbach alpha factor, and the value of the factor was found to be satisfactory (alpha = 0.81). Results were expressed as absolute values, percentage, and mean values. The percentage does not add up to 100, due to the option of simultaneous choice of a number of answers.

Statistical analysis

In order to define the possible determining factors indicating different levels of knowledge of different patients (age, education, area of residence, category of stroke risk group, family history of stroke), non-para-

metric ranking tests, i.e. U Mann-Whitney test for two groups and Kruskal-Wallis test for more than two groups were used. The level of significance was set at p<0.05.

Results

Awareness of stroke risk factors

The most frequently reported stroke risk factor was arterial hypertension (82.67%), followed in a decreasing order by alcohol consumption (66.67%), stress (66.67%), nicotinism (57.33%), and age (57.33%). Heart diseases were mentioned by 50.67% and diabetes by 14.67% of the respondents (Table 3). Prolonged sun exposure as a risk factor for stroke was reported by 64%, vegetarian diet by 40%, systematic physical strain by 12%, and hyperthyroidism by 6.67% of the respondents. Four (5.3%) subjects were unable to indicate any correct answer. Only two (2.6%) respondents provided completely correct answers, i.e. pointed to all true risk factors while indicating none of the false answers.

Table 3. Recognition of potential risk factors for stroke in study patients

Risk factor	n	%
Arterial hypertension	62	82.67
Alcohol abuse	50	66.67
Prolonged stress	50	66.67
Atherosclerosis	45	60.00
Nicotinism	43	57.33
Advanced age	43	57.33
Obesity	42	56.00
Heart diseases	38	50.67
High fat diet	36	48.00
Diabetes	11	14.67
Oral contraceptives	7	9.33

Causes of stroke according to patients

A majority of study subjects indicated ruptured arterial vessels of the brain (72.0%) or arterial stenosis or obliteration (70.67%) in the brain, 49.33% of subjects indicated overheating of the body due to prolonged sun exposure, and 42.67% of subjects pointed to head injury as the cause

of stroke. Completely correct answers were indicated by eight (10.66%) respondents.

Warning signals according to patients

Among correct answers, a majority of patients pointed to a sudden loss of speech or impeded understanding of speech (70.67%), and sudden severe headache (68%) as the warning symptoms of stroke. The most infrequently mentioned symptoms were sudden visual disturbances (Table 4). Among incorrect answers, the most popular were sudden increase in nervous excitability (25.33%) and sudden dyspnea (22.67%). Completely correct answers were provided by eight (10.66%) respondents, while nine (12%) subjects were unable to provide any answer at all.

Initial action to be taken in case of stroke symptoms

Calling an ambulance and asking advice from family doctor were the answers provided by 81.33% and 36.09% of study patients, respectively. Furthermore, 17.33% of subjects thought it was reasonable to wait and see if the symptoms would aggravate, and 9.33% of subjects thought a good strategy was to give the patient a painkiller and wait for the symptoms to regress. Table 5 shows the results of quantitative assessment of the questions related to stroke risk factors, warning signals, direct causes of stroke, action to be taken should the symptoms of stroke occur, and assessment score for the test as a whole. The respective patient scores were 9.81, 5.35, 2.52, 3.77 and 26.83 points. None of the respondents reached maximal score. The knowledge was better among women (28.78 *vs* 25.15; p<0.03) and among patients with university and secondary school education (28.81 *vs* 24.66; p<0.005). There was no correlation between the knowledge and age, area of residence, category of stroke risk group, and family history or close friend with a history of stroke.

Sources of knowledge about stroke

Family and friends were mentioned as the first sources by 29 (38.67%) respondents, followed by television and radio by 24 (32.0%), newspapers and magazines by 22 (29.33%), medical brochures and leaflets by 21 (28.0%), and a physician as the least common source by 18 (24.0%) respondents.

Discussion

Study results demonstrated the patients to be relatively well informed about the aspects of stroke assessed, although the information was only partial, incoherent, acquired by chance and unintentionally. The possibility of the occurrence of stroke was most often associated with arterial hypertension and factors related to lifestyle. Diabetes and oral contraceptives were considerably less frequently indicated as the risk factors for stroke. The superficial nature of the respondents' knowledge was proved by the fact that, apart from the true risk factors, those having nothing to do with stroke were quite commonly indicated, e.g., prolonged sun exposure. Similarly, answer-

similar to those reached in our study. Cheung et al. report that individual risk factors for stroke were recognized by 50% to more than 80%, and most common warning signals of stroke by approximately 60% to 65% of the respondents. The mean value of quantified correct choice, very close to that recorded in the present study, was located at approximately 2/3 of the distance from the lower scale limit. According to the Chinese authors, the knowledge about stroke shown by the Chinese citizens of Hong Kong was good. Dramatically different results were obtained by use of open type questions, where the knowledge presented by the respondents was poor. Kothari et al.[5] report that 39% of the respondents could not name any of the warning signals of stroke, and 43% could not point to any

Table 4. Recognition of warning symptoms of stroke in study patients

Symptom	n	%
Sudden loss of or inability to understand speech	53	70.67
Sudden severe headache occurring for the first time	51	68.00
Sudden unilateral weakness of arm and leg	42	56.00
Sudden unilateral facial weakness	38	50.67
Sudden vision disturbances	37	49.33

ing the question of direct causes of stroke many patients identified overheating of the body as a causative factor of stroke. On the other hand, the warning signs of stroke were quite well recognized, because the percentage of correct answers definitely exceeded the percentage of wrong ones. However, sudden vision impairment was rarely identified as a possible symptom of stroke. The study revealed better knowledge about the issues among female and university educated subjects. It appeared to be quite irrelevant whether or not the patient belonged to a stroke risk group. It is therefore no surprise that only 10 of 39 respondents suffering from diseases considered to be risk factors for stroke were aware of their increased chance for the occurrence of stroke. For comparison, in an American study, a similar group consisted of approximately 41% of respondents[4]. The above findings appear to suggest a conclusion that physicians providing medical care for these patients fail to inform them properly about the potential risks.

Review of the relevant literature revealed six studies devoted to stroke, two of them on patients in the early stage of stroke[3,5,6], while others refer to the general population[4,7,8]. A method similar to ours was used only in the 1999 Chinese study, however, data were collected by phone interviews[7]. The results obtained in China were

risk factor for stroke. In the study of Pancioli et al.[4], the respective proportions were 43% and 50% of the respondents. On the other hand, Williams et al.[6] report on the lack of knowledge about the warning signs of stroke in 62% of the respondents.

On interpreting such great discrepancies in the results obtained by various authors, one must take into account the methods used in different studies. The method of true/false answers could facilitate selection of right answers by taking intelligent guess, thus the results may look better. The method of open questions, on the other hand, could make it difficult for the respondents to identify the risk factors or warning signals of stroke on their own, thus the category of respondents providing no answers to the questions may be greater.

In our study, likewise the reports and studies mentioned above, mass media, family and friends were among the main sources of knowledge about stroke in the general population. Medical staff were the source of information in only 8% of the Chinese respondents and, according to two reports, in 2% and 8% of American respondents[4,5]. In this study, the percentage was 24% of the patients. A similar convergence of answers was found for the questions on stroke emergencies and initial actions to be

Table 5. Quantified level of patients' knowledge of stroke

Questions and scale range	Mean (SD)	Score range
Stroke risk factors (0-17)	9.81 (3.06)	3-17
Warning symptoms (0-8)	5.35 (1.73)	2-8
Causes of stroke (0-4)	2.52 (0.77)	1-4
Initial action in case of emergency (0-4)	3.77 (0.41)	1-4
Total score (0-46)	26.83 (6.79)	10-43

taken. Almost all respondents claimed it was instrumental to call an ambulance. However, clinical observations suggest that this knowledge is not often used, and that many stroke patients are admitted to hospital as late as more than 10 or even 20 hours after the onset of stroke symptoms. It confirms previous remarks stating that the information the patients have is uncertain to the extent that it does not effect constant disposition to taking decisive action in a specific situation. The study did not question the patients about what they would like to find out about stroke and related issues. This type of research was carried out, on a large population, by Hanger and Mulley[9]. They found the respondents who had no stroke experience to ask, first of all, about the nature of the condition and its possible after-effects, whereas the patients who had suffered a stroke or had a family history of stroke primarily asked about the possible forms of rehabilitation, followed by the issues of functional amendment and social support. These domains of patients' interest should also be considered on designing the framework of public education about stroke.

Conclusion

Although the majority of respondents had a relatively good knowledge about stroke, this knowledge did not form a coherent and clear-cut notional structure in their mind.

Due to the fact that mass media were found to be the main source of knowledge about stroke, they should play a considerably greater role in stroke education, especially in increasing the awareness of stroke symptoms as well as in making the general public realize that stroke is a condition that requires immediate and decisive action.

It should be recommended that medical staff be more involved in providing proper education for patients belonging to the groups at a high risk of stroke.

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Sažetak

POZNAVANJE ČINJENICA O MOŽDANOM UDARU MEĐU BOLESNICIMA BEZ MOŽDANOG UDARA

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Cilj ispitivanja bio je procijeniti poznavanje činjenica o moždanom udaru, znakovima upozorenja i hitnim mjerama koje treba poduzeti u slučaju moždanog udara, među bolesnicima ne-neuroloških odjela. Prikupljeni su podaci za 75 bolnički liječenih osoba zbog različitih bolesti, srednje dobi 49,57±14,87 godina. Ispitanici su bili zamoljeni da ispune standardizirani upitnik koji je sadržavao 46 pitanja podijeljenih u dvije skupine. Odgovori su se odnosili na simptome upozorenja, rizične čimbenike, uzroke moždanog udara i prve mjere koje valja poduzeti u slučaju moždanog udara, a bili su polukvantificirani prema proizvoljnom bodovnom sustavu. Od 75 bolesnika, samo ih 5,3% nije bilo upoznato ni s kojim medicinskim rizičnim čimbenikom, dok ih 12% nije poznavalo bilo koji znak upozorenja. S druge strane, samo je 2,6% odnosno 10,66% ispitanika ispravno navelo sve rizične čimbenike i znakove upozorenja, dok su mnogi ispitanici naveli krive odgovore. Većina ispitanika (89,54%) odabrala bi prave mjere u slučaju sumnje na moždani udar. Osobe višeg obrazovanja i žene polučile su bolji bodovni rezultat glede znanja o moždanom udaru. Čimbenici kao što su pripadanje visoko rizičnoj skupini za moždani udar, starosna dob i druga obilježja nisu imala utjecaj na bodovni rezultat. Obitelj, prijatelji i sredstva javnog priopćavanja bili su glavni izvori znanja za ispitanike. Zaključujemo kako, usprkos činjenici da su ispitanici znali dosta o moždanom udaru, narav moždanog udara i s njim povezani problemi često izazivaju zbunjenost ili krivo tumačenje. Potrebna je daljnja izobrazba javnosti kako bi se poboljšalo raspoznavanje znakova upozorenja i rizičnih čimbenika, poglavito među bolesnicima s povećanim rizikom za moždani udar.

Ključne riječi: *Cerebrovaskularne bolesti, prevencija i suzbijanje; Poznavanje; Svjesnost; Stavovi; Populacija; Nadzor*