

Prevalence of Stroke in Ecologically Unfavorable Regions of the Republic of Karakalpakstan

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Abstract Stroke is a leading cause of long-term disability, mortality, and healthcare costs among adults worldwide. This is a major challenge for healthcare systems that requires continuous improvement in stroke care. According to the World Health Organization, "... the global incidence of stroke is projected to increase to 7.8 million by 2030 unless aggressive global action is taken to address this epidemic." Purpose. To study the prevalence of stroke in different ecologically disadvantaged areas of the Republic of Qaraqalpakstan. Material and methods. In order to determine the prevalence of cerebral stroke in the island region of the Republic of Karakalpakstan, diseases leading to stroke, risk factors, clinical course, near-term prognosis, and preventive measures, a "Brain Stroke Registry" was conducted in the Kegeili, Amudarya, Muynak districts of the Republic of Karakalpakstan and the city of Nukus in 2021-2023. An in-depth study was conducted in accordance with a specially developed program to study the general patterns of the development and spread of cerebral strokes, and various research databases and data sources were used. Results. The study compared districts with unfavorable ecological conditions and different climatic conditions, as well as the capital of the republic, Nukus. In Nukus, 985 patients were diagnosed over 3 years, of which 506 (51.4%) were men and 479 (48.6%) were women, respectively, in Kegeili district there were a total of 166 patients, including 100 (60.3%) men and 66 (39.7%) women, in Amudarya district there were a total of 113 patients, including 79 (69.9%) men and 34 (30.1%) women, and in Muynak district there were a total of 65 patients, including 40 (61.5%) men and 25 (38.5%) women. Conclusion. The prevalence of stroke in different ecologically unfavorable areas of the Republic of Qaraqalpakstan depends on the geographical location, and the patients have different indicators by gender.

Keywords Republic of Karakalpakstan, Ecological zone, Stroke

1. Introduction

Stroke is an acute disruption of blood circulation in the brain, often leading to disability. If not treated promptly, the pathology can significantly impair brain function and lead to death [1,4,5,16].

Acute cerebrovascular accidents are a major medical and social problem, which is associated with their high share in the structure of morbidity and mortality of the population, as well as significant indicators of temporary loss of work and primary disability (Gafurov B.G., 2010; Karimov S.I., Rakhimbayeva G.S., Ataniyazov M.K., Mirdzhuraev et al., 2011). Every year, about 9 million people in the world suffer from cerebrovascular diseases, among which ischemic stroke occupies the main place, the mortality rate in the acute period of stroke is 39%. In the Republic of Uzbekistan, 46,000-48,000 cases of the disease are observed annually, at least a third of which lead to death in the acute period (42.4%) (Asadullaev M.M., Ilhomov F.O., Dzhakhongirov A.Kh.,

2002).

Stroke is a leading cause of long-term disability, mortality, and healthcare costs among adults worldwide. This is a major challenge for healthcare systems that requires continuous improvement in stroke care. According to the World Health Organization, "... the global incidence of stroke is projected to increase to 7.8 million by 2030 unless aggressive global action is taken to address this epidemic" [8].

In Uzbekistan, the number of patients with cerebral stroke is also quite high, with 40-45 thousand strokes recorded per year. More than 80% of stroke patients permanently lose their ability to work, and only 10.2% return to work [4,5,9,10,13]. The urgency of stroke problems is also associated with the aging of the patient population (Gusev E.I., 2001; Umarova Kh.Ya., 2004; Sodikova G.K. 2009; Williams LS 2002). Strokes among young people account for 2.5 to 14% of the total stroke population. The structure of strokes is up to 44 years old. was hemorrhagic in 55% of patients, ischemic in 45% to stroke correct comes [8].

People brain in between stroke with illness laws to install attempt quite a bit before started, but different from sources used be and diagnose not standardized from the criteria used .

This and own next various authors by cited information from each other sharp difference so that they of coordination opportunity was not Real illness, death indicators, as well as to the hospital was, and this of indicators dynamics only far time during population known group between just getting used to it reliable information to take possible gives For this purpose Whole world health to keep organization by standardized inspection methods and diagnosis criteria " Acute Stroke Registry " was developed with It was released . from the program use sharp brain stroke with of illness real indicators and of treatment various in stages for the sick help to show efficiency assessment possible gives.

Purpose. Study of the prevalence of stroke in different ecologically disadvantaged areas of the Republic of Karakalpakstan.

2. Material and Methods

In order to determine the prevalence of cerebral stroke in the island region of the Republic of Karakalpakstan, diseases leading to stroke, risk factors, clinical course, near-term prognosis, and preventive measures, a "Brain Stroke Registry" was conducted in the Kegeili, Amudarya, Muynak districts of the Republic of Karakalpakstan and the city of Nukus in 2021-2023. An in-depth study was conducted in accordance with a specially developed program to study the general patterns of the development and spread of cerebral strokes, and various research databases and data sources were used. The research was conducted in a general manner. All cases of first-time and recurrent stroke, as well as deaths from stroke, that occurred during the observation period among the population of the Republic of Karakalpakstan were recorded.

3. Results

In the initial stages of the study, we analyzed the gender distribution and percentage of patients who had a first stroke in the ecologically unfavorable regions of the Republic of Karakalpakstan - Kegeyli, Muynak, Amu Darya districts and the city of Nukus during 2021-2023. The results show that,

of the 1,329 stroke patients registered over the 3-year period, 725 (54.6%) were men and 604 (45.4%) were women. When compared between 2021 and 2023, a total of 399 patients had a stroke in 2021, of which 215 (61.4%) were men and 184 (46.2%) were women. In 2022, a total of 430 patients were diagnosed with diabetes, of which 232 (53.9%) were men and 198 (46.1%) were women. In 2023, a total of 500 patients were diagnosed, of which 278 (55.6%) were men and 222 (44.4%) were women. Over the years, the incidence of the disease in men and women had almost the same indicators, in men - 53.4% - 53.9% - 55.6% and in women - 46.2% - 46.1% - 44.4%.

The study compared districts with unfavorable ecological conditions and different climatic conditions, as well as the capital of the republic, Nukus. In Nukus, 985 patients were diagnosed over 3 years, of which 506 (51.4%) were men and 479 (48.6%) were women, respectively, in Kegeili district there were a total of 166 patients, including 100 (60.3%) men and 66 (39.7%) women, in Amudarya district there were a total of 113 patients, including 79 (69.9%) men and 34 (30.1%) women, and in Muynak district there were a total of 65 patients, including 40 (61.5%) men and 25 (38.5%) women. The results show that while the incidence of men and women in Nukus is relatively close to each other, the incidence of the disease in the more environmentally unfavorable districts was higher, 60.3%, 69.9% and 61.5%, with a significant difference of $p \leq 0.001$ for women, all data are presented in Table 1.

The total number of cerebral strokes detected during the inspection was 1329, of which the number of ischemic strokes was 595 (44.7%), hemorrhagic strokes 513 (38.6%) and non-differentiated strokes 221 (16.7%), compared to the districts, the total number of ischemic strokes in Nukus was 431 (43.7%), hemorrhagic strokes 415 and (42.1%) and undifferentiated stroke 139 (14.2%); 121 ischemic strokes (72.9%), 58 hemorrhagic strokes (34.9%) and 48 undifferentiated strokes (28.9%) in Kegeili district; 80 (70.8%) ischemic strokes, 18 (15.9%) hemorrhagic strokes and 15 (13.3%) undifferentiated strokes in Amudarya district; In Muynoq district, there were 24 cases of ischemic stroke (36.9%), 22 cases of hemorrhagic stroke (33.8%) and 19 cases of nondifferential stroke (29.3%), Fig. 1.

Table 1. Distribution by gender and percentage of patients who had their first stroke in 2021-2023

Year of the Rat.		Nukus n-985		Kegely n-166		Amu Darya n-113		Muynak n-65		Total n-1329	
		number	interest	number	interest	number	interest	number	interest	number	percentage
2021 n-399	oh	159	16.1	29	17.5	17	15.0	10	15.4	215	53.4
	a	152	15.4	18	10.8	6	5.3	8	12.3	184	46.2
2022 n-430	oh	167	17.0	25	15.1	32	28.3	8	12.3	232	53.9
	a	160	16.2	18	10.8	16	14.2	4	6.2	198	46.1
2023 n-500	oh	180	18.3	46	27.7	30	26.5	22	33.8	278	55.6
	a	167	17.0	30	18.1	12	10.6	13	20.0	222	44.4
Total	oh	506	51.4	100	60.3	79	69.9	40	61.5	725	54.6
	a	479	48.4	66	39.7	34	30.1	25	38.5	604	45.4

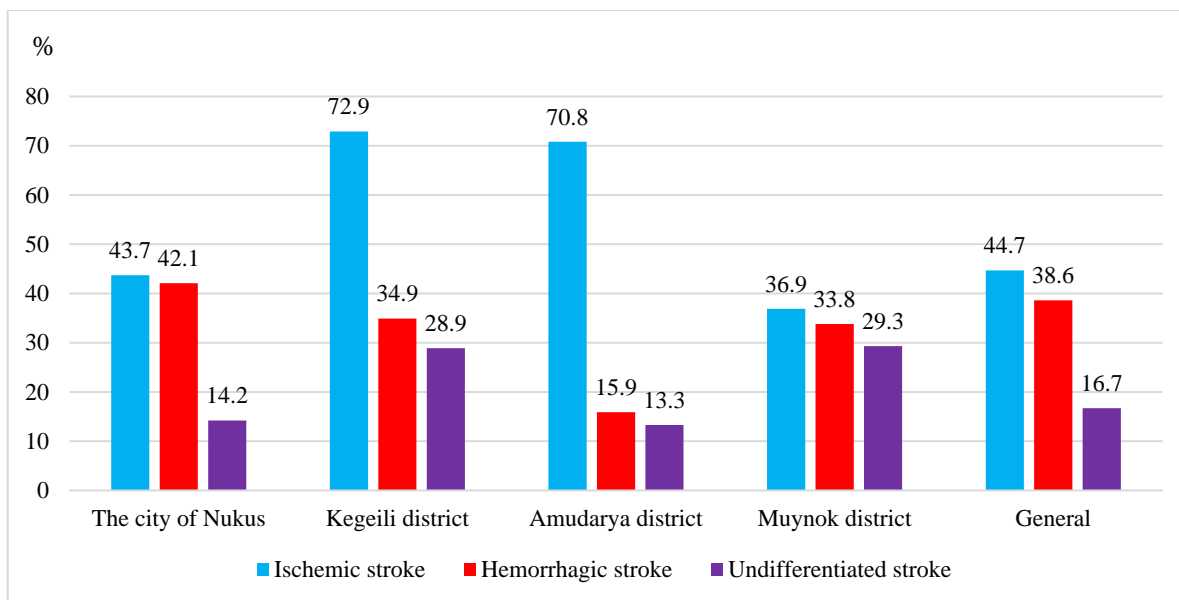


Figure 1. Frequency of meeting by type of stroke (%)

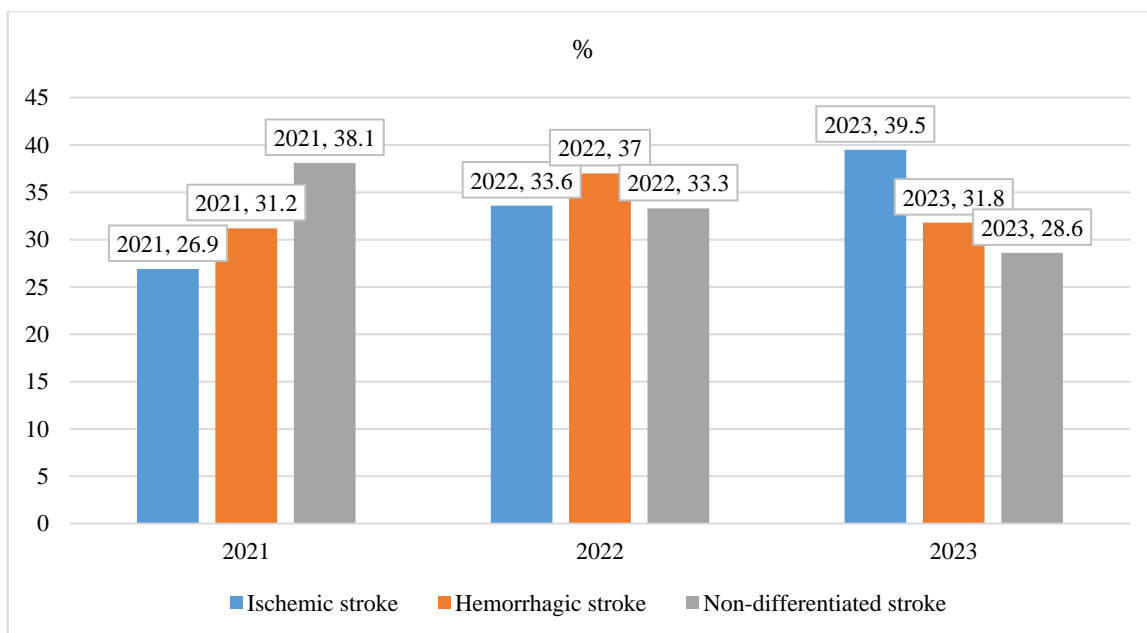


Figure 2. Distribution of stroke types in 2021-2023

The data show that ischemic stroke is more common in Kegeili and Amudarya districts, while hemorrhagic stroke is more common in Nukus city and non-differential stroke is more common in Muynoq district.

In the next step, we found it necessary to compare stroke types across years. The total number of cerebral strokes was 1329, of which the number of ischemic strokes was 595 (44.7%), hemorrhagic stroke 513 (38.6%) and undifferentiated stroke 21 (16.7%), while ischemic stroke was 160 cases in 2021, 200 cases in 2022 and 235 cases in 2023. occurred, and hemorrhagic stroke occurred in 160 cases in 2021, 190 cases in 2022, and 163 cases in 2023, undifferentiated stroke occurred in 8 cases in 2021, 7 cases in 2022, and 6 cases in 2023, Fig. 2.

At the next stage, we performed a comparative analysis of the localization of ischemic stroke in the cross-section of districts. Of the total 595 patients, 520 (87.3%) had carotid basin - KH, 106 (17.8%) had vertebrobasilar basin - VH, and 59 (9.9%) had unclear basin - NH. In the section of districts, in the city of Nukus, 331 patients (76.8%) had KH, 66 patients (15.3%) and 34 patients had NH (7.9%); 90 patients (74.4%) in Kegeili had KH, 19 patients (15.7%) and 34 patients had NH (9.9%), in Amudarya district 60 patients (75.0%) had KH, 12 patients (15.0%) and 8 patients had NH (10.0%), and in Muynoq district 39 patients (73.6%) had KH, 9 patient (17.0%) and NH (9.4%) were detected in 5 patients, Fig. 3.

We next analyzed the affected right and left hemispheres as well as brainstem lesions. The obtained results show that in 295 patients (22.2%) the cerebral cortex was damaged, in 1034 patients (77.8%) the hemispheres were damaged, in 458 patients (34.5%) the right hemispheres were damaged, and in 576 patients (43.3%) the left hemispheres were damaged. When comparing the cross section of districts, right hemisphere damage was observed in 354 patients (35.9%), left hemisphere damage was observed in 446 patients (45.35%), and brain stem damage was observed in

185 patients (18.8%) in Nukus. In Kegeili district, 41 patients (24.7%) had right hemisphere damage, 61 (36.7%) left hemisphere damage, and 64 (38.6%) brain stem damage. In Amudarya region, 46 patients (40.7%) had right hemisphere damage, 45 (39.8%) left hemisphere damage, and 22 (19.5%) brain stem damage. In Muynoq district, the damage of the right hemispheres was observed in 17 patients (26.2%), the damage of the left hemisphere was observed in 24 patients (36.9%), and the damage of the brain column was observed in 24 patients (36.9%), Fig. 4.

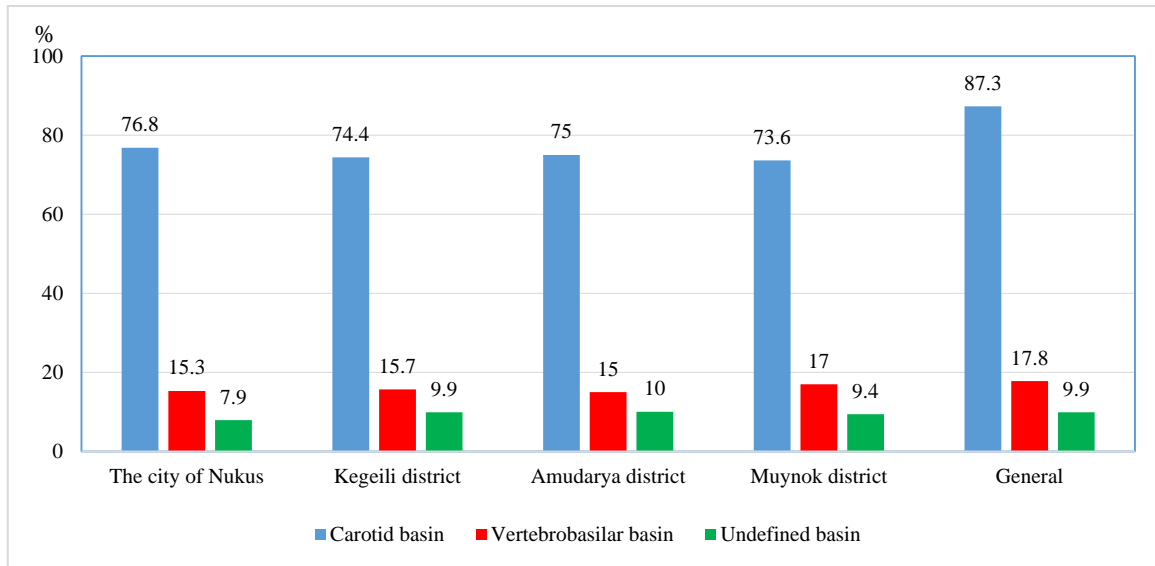


Figure 3. Comparative analysis (%) of the regional cross-section of ischemic stroke localization

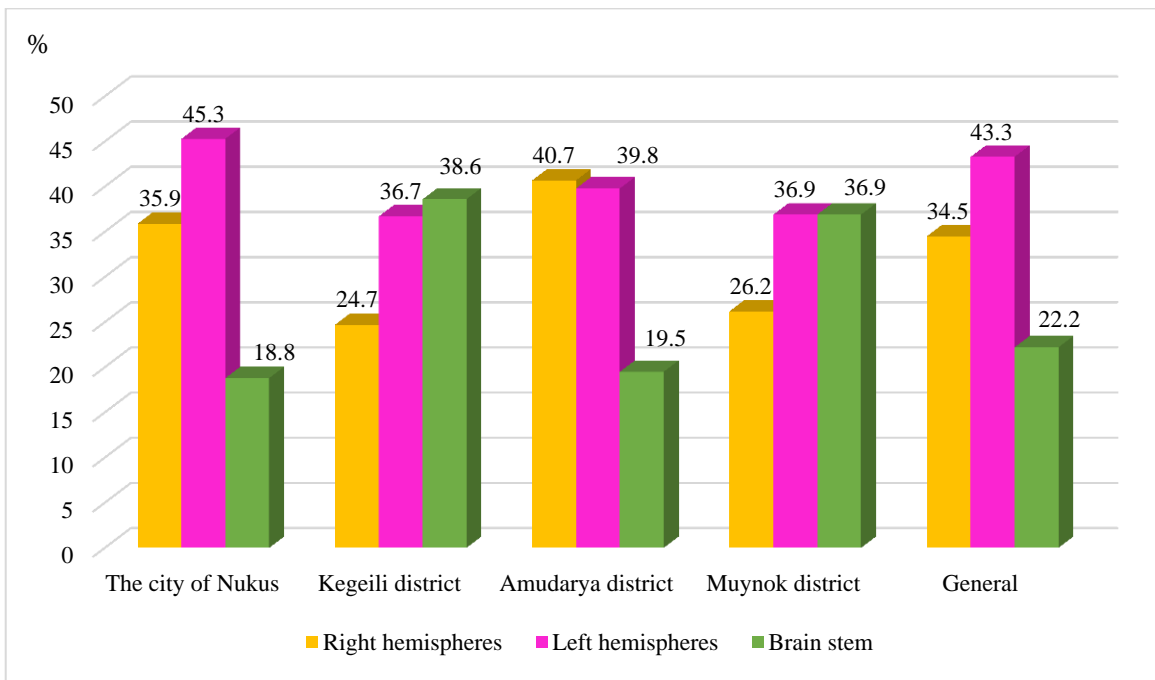


Figure 4. Frequency of stroke according to damage of cerebral hemispheres (%)

In the next stage of the study, we analyzed the incidence of stroke in patients by age. The World Health Organization's age classification was used as a basis.

In the next step, we analyzed the incidence of strokes by gender, taking into account the age limits according to the World Health Organization classification. Patients aged 20-29 years accounted for 13 (0.9%), 30-39 years for 49 (3.7%), 40-49 years for 110 (8.35%), 50-59 years for 288 (21.6%), 60-69 years for 433 (32.5%), 70-79 years for 328 (24.7%), and 80 years and older for 108 (8.1%). The data obtained show that of the total number of stroke patients, 725 (54.6%) were men and 604 (45.4%) were women. The highest incidence of the disease was in both men and women aged 60-69 years, with 250 (34.5%) men and 183 (30.3%) women, which significantly differed from patients in the other groups ($p \leq 0.001$). When comparing stroke types, ischemic stroke was most common in men aged 60-69 years (143 - 35.9%), and in women aged 69-69 years (94 - 29.7%). Hemorrhagic stroke was also more common in patients aged 60-69, 85 in men - 34.6% and 69 in women - 32.9%, while non-differential stroke occurred more frequently in women aged 70-79, 22 - 26.5%, and in men, non-differential stroke occurred more frequently in those aged 50-59 and 60-69, 22 - 25.9%.

Based on the data obtained, it can be said that the prevalence of strokes is closely related to age, and this relationship is significantly different in women ($p \leq 0.001$). In men, the incidence is higher in the age groups 50-59 and 60-69, and the significant difference is relatively insignificant ($p \leq 0.05$).

4. Conclusions

The prevalence of stroke in different ecologically unfavorable regions of the Republic of Karakalpakstan is intrinsically dependent on the geographical location and patients have different indicators by gender. In sandy-desert zones, the prevalence of stroke is more observed and has seasonality.

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